



TITLE OF THE INVENTION

Game System, Game Apparatus, Storage Medium Storing Game Program
and Game Data Exchange Method

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BACKGROUND OF THE INVENTION

Field of the invention

The present invention relates to a game system, a game apparatus, a storage medium storing a game program and a game data exchange method. More specifically, the present invention relates to a game system provided with a plurality of mobile game
10 — apparatuses which ^{can} are radio-communicated with each other, a game apparatus, a storage medium storing a game program, and a game data exchange method.

Description of the prior art

— In ^a conventional ~~such a~~ kind of game system, the game apparatus can exchange game data by communicating with another game apparatus. For example, players who
15 — desire to exchange ~~the~~ game data orally confirm ~~exchange~~ exchange conditions with each other, and then, if the exchange conditions are coincident with each other, the game data is exchanged by connecting the game apparatuses with a fixed-line cable.

— Furthermore, ^{An} ~~another~~ example of such a ~~kind of~~ game system is disclosed in a Japanese Patent Laying-open No. 2003-23661, laid-open on January 24, 2003. In a
20 — network game of the prior art, providing ^{so that} card data and desired card data are set, and ~~if~~ the conditions are coincident with each other, the card data are exchanged.

— However, in the former ^{example}, there is a need to orally confirm the exchange condition, and therefore, the person with whom the user exchanges the game data is limited to ^{the}
— player's friend, his acquaintance, ~~and~~ etc. Thus, if ^{only} a few ^{of the player's friends, acquaintances, et} people have the same game
25 — software ~~among his friends, his acquaintances, and etc.~~ ^{the} an opportunity to exchange and

— exchangeable game data ^{are} ~~is~~ limited; thus, it is almost impossible to fully enjoy the exchange. That is, enjoyment of the game is reduced.

— Also, in the latter, ^{example} there is a need to connect with a network in order to exchange the game data, ~~and~~ this makes it impossible to exchange the game data at any time with ease. ^{However} In addition, there is a need to prepare a server for ~~an~~ exchange processing, and this ^{the} increases ^{on the provider's side} ~~such as an~~ initial investment, ~~running expenses~~ ^{and} etc. ~~for a provider~~ of a service.

SUMMARY OF THE INVENTION

10 — Therefore, it is a primary ^{feature} ~~object~~ of the ^{illustrative example} ~~present invention~~ to provide a novel game system, game apparatus, storage medium storing a game program, and game data exchange method.

Furthermore, another ^{feature} ~~object~~ of the ^{illustrative embodiment} ~~present invention~~ is to provide a game system, a game apparatus, a storage medium storing a game program, and a game data exchange
15 method that are able to exchange game data with ease and improve an entertainment aspect of the game.

A game system according to the present invention is constructed of a plurality of mobile game apparatuses and exchanges game data between the respective game apparatuses. Each game apparatus, comprising ^{ES} ~~ES~~: a game data storing ^{ES} ~~ES~~ means for storing
20 — game data; a providing game data designating ^{ES} ~~ES~~ means for designating providing game data that is allowed to be provided to another game apparatus out of the game data stored in the
— game data storing ^{ES} ~~ES~~ means; an exchange condition setting ^{ES} ~~ES~~ means for setting exchange condition data indicative of an exchange condition that is a condition of game data desired to be provided from said another game apparatus in exchange for a provision of
25 — the providing game data to said another game apparatus; a communication ^{ES} ~~ES~~ means for

performing short-distance radio communication with another game apparatus; an
— exchange desire transmitting ~~means~~^{es} for broadcasting by use of the communication ~~means~~^{es}
exchange desired data to other game apparatus(es) without specifying a destination
— address; an exchange desire receiving ~~means~~^{es} for receiving by use of the communication ~~means~~^{es}
5 — ~~means~~ the exchange desired data from another game apparatus; and a game data exchange
— ~~means~~ for exchanging the game data with a specific game apparatus by use of the
— communication ~~means~~^{es}, wherein a first game apparatus out of the plurality of game
apparatuses transmits the exchange desired data by use of the exchange desire
— transmitting ~~means~~^{es}, and a second game apparatus out of the plurality of game apparatuses
10 — receives the exchange desired data, the game data exchange ~~means~~^{es} of the first game
— apparatus and the game data exchange ~~means~~^{es} of the second game apparatus determine, by
communicating at least one of attribute information relating to the providing game data
— and the exchange condition data by use of the communication ~~means~~^{es}, whether or not the
providing game data of the first game apparatus satisfies the exchange condition of the
15 second game apparatus, and whether or not the providing game data of the second game
apparatus satisfies the exchange condition of the first game apparatus, and exchange, in a
case both of the exchange conditions are satisfied, the providing game data of the first
game apparatus for the providing game data of the second game apparatus.

More specifically, the game system is constructed of a plurality of mobile game
20 apparatuses (10: corresponding reference numeral in the detailed description of the
preferred embodiments described later. Hereinafter, the same is applied), and exchanges
the game data between the respective game apparatuses (10). Each game apparatus (10)
— is provided with the game data storing ~~means~~^{es} (28 or 44) in which the game data is stored.
— The providing game data designating ~~means~~^{es} (20, 38, S45 to S57, S67) designates the
25 providing game data that is the game data allowed to be provided to another game

apparatus (10) out of the game data stored in the game data storing ~~means~~^{or means} (28 or 44). For example, the game data that is allowed to be provided to another game apparatus (10) by the player is designated in response to an instruction from the player, or the game data to be provided to another game apparatus (10) is automatically designated by the game program. The exchange condition setting ~~means~~^{or means} (20, 38, S59 to S67) sets the exchange condition that is the condition of the game data desired to be provided from said another game apparatus (10) in exchange for the provision of the providing game data to said another game apparatus (10). Herein, the exchange condition is a condition to determine the game data (providing game data and game data to be exchanged) to be provided from said another game apparatus (10) is ~~what~~^{the} kind of the game data. For example, the game data desired to be provided from another game apparatus (10) is designated in response to an instruction from the player, or is automatically designated by the game program. The communication ~~means~~^{or means} (14) communicates with another game apparatus (10) by ~~the~~ short-distance radio communication. The exchange desire transmitting ~~means~~^{or means} (20, S167, S197) broadcasts by use of the communication ~~means~~^{or means} (14) the exchange desired data (data indicative of being connectable) to other game apparatus(es) (10) without specifying the destination address. The exchange desire receiving ~~means~~^{or means} (20, S155, S185, S211) receives by use of the communication ~~means~~^{or means} (14) the exchange desired data from another game apparatus (10). The game data exchange ~~means~~^{or means} (20, S105 to S109, S135 to S139) exchanges the game data with a specific game apparatus (10) by use of the communication ~~means~~^{or means} (14).

For example, the first game apparatus out of the plurality of game apparatuses (10) transmits the exchange desired data by use of the exchange desire transmitting ~~means~~^{or means} (20, S167, S197), and the second game apparatus out of the plurality of game apparatuses receives the exchange desired data. The game data exchange ~~means~~^{or means} (20, S105 to S109,

S135 to S139) of the first game apparatus and the game data exchange means (20, S105 to S109, S135 to S139) of the second game apparatus communicate at least one of the attribute information (kind and level of the character) relating to the providing game data and the exchange condition data (kind and level of the character desired to be provided) — by use of the communication means (14). Each of the game data exchange means (20, S105 to S109, S135 to S139) determines whether or not the providing game data of the first game apparatus satisfies the exchange condition of the second game apparatus, and whether or not the providing game data of the second game apparatus satisfies the exchange condition of the first game apparatus. Then, in a case that both of the exchange conditions are satisfied, the providing game data of the first game apparatus and the providing game data of the second game apparatus are exchanged with each other. More specifically, the providing game data is erased from the game data storing means (28 or 44) of player's own, and by communicating with another game apparatus (10) by use of the communication means (14), the providing game data of said another game apparatus (10) is received and stored in the game data storing means (28 or 44). That is, the game data storing means (28 or 44) stores game data generated or obtained through the play of the virtual game by the player, or game data set in advance in the game program.

— More specifically, in a case that the game data that is designated as the providing game data in the first game apparatus satisfies the exchange condition set in the second game apparatus, and in a case that the game data that is designated as the providing game data in the second game apparatus satisfies the exchange condition set in the first game apparatus, both of the game data are exchanged. As a method of determining whether or not the exchange conditions are satisfied, there are three methods (methods 1 to 3) as follows.

(a) The first game apparatus transmits the predetermined information of the providing game data of its own (e.g., kind and level of the character of the providing game data) to the second game apparatus. (This may be individually transmitted by designating the second game apparatus, or may be broadcasted without designating the second game apparatus).

(b) The second game apparatus receives the predetermined information relating to the providing game data of the first game apparatus so as to compare the same with the exchange condition of its own. ~~In case~~ ^{If the} the condition is satisfied, the second game apparatus transmits the predetermined information relating to the providing game data of its own to the first game apparatus.

(c) The first game apparatus receives the predetermined information relating to the providing game data of the second game apparatus so as to compare the same with the exchange condition of its own. ~~In case that~~ ^{If the} condition is satisfied, both of the game data are exchanged between the first game apparatus and the second game apparatus.

(2) Method 2

(a) The first game apparatus transmits the exchange condition of its own to the second game apparatus. (This may be individually transmitted by designating the second game apparatus, or may be broadcasted without designating the second game apparatus).

(b) The second game apparatus receives the exchange condition of the first game apparatus so as to compare the same with the predetermined information relating to the providing game data of its own. ~~In case that~~ ^{If the} condition is satisfied, the second game apparatus transmits the exchange condition of its own to the first game apparatus.

(c) The first game apparatus receives the exchange condition of the second game apparatus so as to compare the same with the predetermined information relating to the providing game data of its own. If the condition is satisfied, both of the game data are

exchanged between the first game apparatus and the second game apparatus.

(3) Method 3

(a) The first game apparatus transmits the predetermined information and exchange condition relating to the providing game data of its own to the second game apparatus. (This may be individually transmitted by designating the second game apparatus, or may be broadcasted without designating the second game apparatus) X

(b) The second game apparatus receives the predetermined information and exchange condition relating to the providing game data of the first game apparatus so as to respectively compare the same with the predetermined information and exchange condition relating to the providing game data of its own. ^{If} ~~In a case~~ the conditions are satisfied, both of the game data are exchanged between the first game apparatus and the second game apparatus.

Another method except for the above-described three methods is applicable, and it is appropriate that by communicating the predetermined information of the providing game data and the exchange condition between the first game apparatus and the second game apparatus, that the providing game data of the first game apparatus satisfies the exchange condition of the second game apparatus is determined by at least the first game apparatus or the second game apparatus, and that the providing game data of the second game apparatus satisfies the exchange condition of the first game apparatus is determined by at least the first game apparatus or the second game apparatus. The same is applied hereunder.

According to the ^{illustrative embodiment} ~~present invention~~, it is possible to exchange game data having coincident exchange conditions with each other by performing short-distance radio communication; ^{the} and therefore, this eliminates ~~the~~ ^atrouble of negotiating with ^aplayer's acquaintance ¹⁰ for exchanging the game data, and so forth. That is, it is possible to

exchange the game data with ease. Furthermore, since the person with whom the player exchanges the game data is not limited to his acquaintance, it is possible to exchange the game data with a number of people, capable of increasing the possibility of exchanging the game data. In addition, the use of the mobile game apparatus and the short-distance radio communication enables the possibility of exchanging the game data to be increased if only the user goes to wherever people gather, capable of further increasing enjoyment of the exchange. Furthermore, a game data exchanging process is performed between the game apparatuses, and this eliminates a need for preparing a server for the exchange process, and reduces a burden such as ~~an~~ initial investment, ~~a~~ running cost, ~~and~~ etc. for a provider of the game.

Another game system according to the present invention is constructed of a plurality of mobile game apparatuses, and ^{it} exchanges game data between the respective game apparatuses. Each game apparatus, comprising: a game data storing means for storing game data; a providing game data designating means for designating providing game data that is allowed to be provided to another game apparatus out of the game data stored in the game data storing means; an exchange condition setting means for setting exchange condition data indicative of an exchange condition that is a condition of game data desired to be provided from said another game apparatus in exchange for a provision of the providing game data to said another game apparatus; a communication means for performing short-distance radio communication with another game apparatus; a connection establishing means for performing by use of the communication means a process to establish a connection by a radio communication with a specific game apparatus; and a game data exchange means for exchanging the game data with the specific game apparatus by use of the communication means, wherein in a first game apparatus and a second game apparatus out of the plurality of game apparatuses, the

— connection establishing ~~means~~ of one game apparatus executes a first connection establishing process by broadcasting connection requiring data for establishing a connected state with other game apparatus which has received the connection requiring data, and the connection establishing ~~means~~ of the other game apparatus executes a

5 — second connection establishing process by receiving the connection requiring data for establishing the connected state with the one game apparatus which has broadcasted the connection requiring data, and the game data exchange ~~means~~ of the first game apparatus and the game data exchange means of the second game apparatus determine, by communicating at least one of attribute information relating to the providing game data

10 — and the exchange condition data by use of the communication ~~means~~, whether or not the providing game data of the first game apparatus satisfies the exchange condition of the second game apparatus, and whether or not the providing game data of the second game apparatus satisfies the exchange condition of the first game apparatus, and exchange, in a case both of the exchange conditions are satisfied, the providing game data of the first

15 game apparatus for the providing game data of the second game apparatus by communicating between the first game apparatus and the second game apparatus by use of the communication ~~means~~.

More specifically, the game system is constructed of the plurality of mobile game apparatuses (10) and exchanges the game data between the respective game apparatuses

20 — (10). Each game apparatus (10) is provided with the game data storing ~~means~~ (28 or 44) in which the game data is stored. The providing game data designating ~~means~~ (20, 38, S45 to S57, S67) designates the providing game data that is allowed to be provided to

— another game apparatus (10) out of the game data stored in the game data storing ~~means~~ (28 or 44). The exchange condition setting ~~means~~ (20, 38, S59 to S67) sets the exchange

25 condition data indicative of the exchange condition that is a condition of the game data

desired to be provided from said another game apparatus in exchange for the provision of

- the providing game data to said another game apparatus (10). The communication means (14) performs short-distance radio communication with another game apparatus (10).
- The connection establishing means (20, S81) performs by use of the communication means (14) a process to establish a connection by a radio communication with a specific
- game apparatus (10). The game data exchange means (20, S105 to S109, S135 to S139) exchanges the game data with the specific game apparatus (10) by use of the
- communication means (14).

For example, with respect to the first game apparatus and the second game

- apparatus out of the plurality of game apparatuses (10), the connection establishing means (20, S81) of one game apparatus executes the first connection establishing process (20, S165 to S177, S195 to S207) by broadcasting the connection requiring data (for example, data indicative of being connectable for establishing the connected state with
- another game apparatus which has received the connection requiring data, and the
- connection establishing means (20, S81) of the other game apparatus executes the second connection establishing process (20, S153 to S163, S183 to S193, S209 to S217) by receiving the connection requiring data for establishing the connected state with the one game apparatus which has broadcasted the connection requiring data. The game data
- exchange means (20, S105 to S109, S135 to S139) of the first game apparatus and the
- game data exchange means (20, S105 to S109, S135 to S139) of the second game apparatus communicate at least one of the attribute information relating to the providing game data and the exchange condition data between the first game apparatus and the
- second game apparatus by use of the communication means (14). Thus, each of the game
- data exchange means (20, S105 to S109, S135 to S139) determines whether or not the
- providing game data of the first game apparatus satisfies the exchange condition of the

second game apparatus, and whether or not the providing game data of the second game apparatus satisfies the exchange condition of the first game apparatus, and then, in a case that both of the exchange conditions are satisfied, exchanges the providing game data of the first game apparatus for the providing game data of the second game apparatus by use
5 — of the communication ^{er} means (14) by communicating between the first game apparatus and the second game apparatus.

— In the ^{illustrative embodiment} ~~present invention~~ also, it is possible to exchange ~~both of~~ the game data with ease as in the above-described game system.

In one embodiment of the present invention, the game apparatus, further
10 — comprising ^{er} a game program storing ^{er} means for storing a game program; a game program
— executing ^{er} means for generating the game data by executing the game program; and a
— game data storing-process ^{er} means for storing the game data generated by the game
— program executing ^{er} means in the game data storing ^{er} means. More specifically, the game
— apparatus (10) is provided with the game program storing ^{er} means (42) for storing the game
15 — program. The game program executing ^{er} means (20, S21 to S41) generates the game data
by executing the game program. Herein, the generation of the game data is, for example,
— to obtain character data, item data, and so on, according to the situation of the game, to
change the attribute information of the characters, and so forth. The game data storing
— process ^{er} means (20, S41) stores the game data generated by the game program executing
20 — means (20, S21 to S41) in the game data storing ^{er} means (28 or 44). That is, the character
data, the item data, and the attribute information are recorded. Accordingly, it is possible
— to exchange the game data such as the character data ~~X~~ and the like with ease, capable of
— improving ^{the} an entertainment aspect of the game.

In another embodiment of the present invention, the exchange condition data
25 includes data for designating a kind of the game data desired to be provided. More

specifically, the exchange condition data (data stored in an exchange condition data storing area 282) includes the data (the kind of the character) for designating the kind of the game data desired to be provided. Therefore, the game data such as the game character and the like is exchanged for each kind.

5 — In ^{another} ~~the other~~ embodiment of the present invention, the exchange condition data further includes an attribute value of the game data desired to be provided. More specifically, the exchange condition data further includes the attribute value (for example, the level of the character) of the game data desired to be provided, and therefore, it is possible to exchange the game data by designating not only the kind of the game data, but
10 also the attribute value such as the level of the character.

— In a further embodiment of the present invention, the exchange desire transmitting ~~means~~
— ~~means~~ continuously broadcasts the exchange desired data. More specifically, the
— exchange desire transmitting ~~means~~ ^{means} (20, S167, S197) continuously broadcasts the exchange desired data, and therefore, it is possible to continuously search another game
15 apparatus that satisfies the exchange condition. In a case that the player moves with the game apparatus of the present invention, another game apparatus that exists within the
— communicationable range is variable, and therefore, it is possible to increase a possibility
— of exchanging the game data by continuously searching ^{for} ~~another~~ game apparatus.

In another embodiment of the present invention, the providing game data
20 — designating ~~means~~ ^{means} designates the providing game data according to an instruction from a
— player. More specifically, the providing game data designating ~~means~~ ^{means} (20, 38, S45 to
— S57, S67) designates the game data according to ^{an} ~~the~~ instruction from the player. That is,
it is possible for the player to designate desired game data.

— In ^{another} ~~the other~~ embodiment of the present invention, the providing game data
25 — designating ~~means~~ ^{means} is validated when a progress of a virtual game executed by the game

apparatus satisfies a predetermined condition. More specifically, when the progress of the virtual game executed by the game apparatus (10) satisfies the predetermined condition ("YES" in a step S43), the providing game data designating ~~means~~ (20, 38, S45 to S57, S67) is validated, and therefore, it is possible to enhance the user's enthusiasm for progress of the game, such as a game clear, level up, and so on.

In a further embodiment of the present invention, the exchange condition setting ~~means~~ sets the exchange condition according to an instruction from a player. More specifically, the exchange condition setting ~~means~~ (20, 38, S59 to S67) sets the exchange condition according to the instruction from the player; and therefore, it is possible for the player to set desired game data as the game data required to be provided.

In another embodiment of the present invention, the exchange condition setting ~~means~~ is validated when a progress of a virtual game executed by the game apparatus satisfies a predetermined condition. More specifically, when the progress of the virtual game executed by the game apparatus (10) satisfies the predetermined condition ("YES" in a step S43), the exchange condition setting ~~means~~ (20, 38, S59 to S67) is validated. Accordingly, it is possible to enhance player's enthusiasm for progress of the game, such as a game clear, level up, and so on.

In ~~the other~~ ^{another} embodiment of the present invention, the providing game data designating ~~means~~ automatically designates, when a progress of a virtual game executed by the game apparatus satisfies a predetermined condition, the providing game data according to the predetermined condition. More specifically, when the progress of the virtual game executed by the game apparatus (10) satisfies the predetermined condition ("YES" in a step S43), the providing game data designating ~~means~~ (20, 38, S45 to S57, S67) automatically designates the providing game data according to the predetermined condition. That is, the providing game data intended by a developer such as a

programmer of the game, and the like is automatically designated, and this eliminates the
— player's bother. Furthermore, which game data is designated is unknown to the player,
— and thus, it is possible to increase unpredictability and enjoyment of the exchange.

— In a further embodiment of the present invention, the exchange condition setting
5 — ~~means~~ automatically sets, when a progress of a virtual game executed by the game
apparatus satisfies a predetermined condition, the exchange condition according to the
predetermined condition. More specifically, when the progress of the virtual game
executed by the game apparatus (10) satisfies the predetermined condition ("YES" in a
— step S43), the exchange condition setting ~~means~~ (20, 38, S59 to S67) automatically sets
10 the exchange condition according to the predetermined condition. That is, the exchange
condition intended by a developer such as a programmer of the game, and the like, i.e.,
the game data required to be provided is automatically designated, and this eliminates the
player's bother. Furthermore, which game data is designated is unknown to the player,
and thus, it is possible to increase unpredictability and enjoyment of the exchange.

15 — In one embodiment of the present invention, the game data exchange ~~means~~
— includes an inquiring ~~means~~ for inquiring of a player whether or not to perform an
exchange when it is determined that both of the exchange conditions are satisfied. More
— specifically, the inquiring ~~means~~ (18, 20, S128, S129) inquires of the player whether or
not to perform the exchange when it is determined that both of the exchange conditions
20 are satisfied. After inquiring of the player whether or not to perform the exchange, the
game data is exchanged, and therefore, it is possible to prevent the game data not intended
by the user from being erroneously exchanged.

In another embodiment of the present invention, the game apparatus, further
— comprising: a game program storing ~~means~~ for storing a game program; and a game
25 — program executing ~~means~~ for executing the game program, wherein when the game

— program is executed by the game program executing ~~means~~^{means}, the game apparatus is
 — connected to said ~~another~~ game apparatus by the connection establishing ~~means~~^{means} and
 — executes the exchange processing of the game data with said ~~another~~ game apparatus that
 — satisfies both of the exchange conditions by the game data exchange ~~means~~^{means}. More
 5 — specifically, the game apparatus (10) is further provided with the game program storing
 — ~~means~~ (42). The game program executing ~~means~~^{means} (20, S21 to S41) executes the game
 — program. Then, when the game program is executed by the game program executing
 — ~~means~~ (20, S21 to S41), the game apparatus is connected said another game apparatus
 — (10) by the connection establishing ~~means~~^{means} (20, S81), and executes the exchange
 10 — processing of the game data with said another game apparatus that satisfies both of the
 — exchange conditions by the game data exchange ~~means~~^{means} (20, S105 to S109, S135 to S139).
 Thus, the game data is exchangeable even during the game, and this keeps the player from
 being bored such as simply waiting for the exchange of the game data. In addition, this
 — eliminates a miss of an opportunity to exchange during the game.
 15 — In ~~the other~~^{another} embodiment of the present invention, when a progress of a virtual
 — game by the game program executing ~~means~~^{means} satisfies a predetermined condition, the
 game apparatus is connected to said another game apparatus by the connection
 — establishing ~~means~~^{means} and executes the exchange processing of the game data with said
 — ~~another~~ game apparatus that satisfies both of the exchange conditions by the game data
 20 — exchange ~~means~~^{means}. More specifically, when a progress of a virtual game by the game
 — program executing ~~means~~^{means} (20, S21 to S41) satisfies a predetermined condition, the game
 — apparatus (10) is connected to said ~~another~~ game apparatus (10) by the connection
 — establishing ~~means~~^{means} (20, S81) and executes the exchange processing of the game data with
 — said ~~another~~ game apparatus (10) that satisfies both of the exchange conditions by the
 25 — game data exchange ~~means~~^{means} (20, S105 to S109, S135 to S139). Thus, it is possible to

exchange the game data under the exchange condition according to the progress of the virtual game that constantly changes.

— In a further embodiment of the present invention, the exchange desire transmitting
— means broadcasts at least one of the attribute information relating to the providing game
5 data of its own and the exchange condition data. More specifically, the exchange desire
— transmitting means (20, S167, S197) broadcasts at least one of the attribute information
relating to the providing game data of its own and the exchange condition data. The
attribute information relating to the providing game data and the exchange condition data
are broadcasted to allow the information to be applied to a number of game apparatuses,
10 capable of promptly performing a process to determine whether or not the exchange
condition is satisfied.

In another embodiment of the present invention, the providing game data
— designating means is able to designate a plurality of providing game data, the exchange
— condition setting means sets the exchange condition data in such a manner as to
15 — correspond to each of the providing game data, the game data exchange means of the first
— game apparatus and the game data exchange means of the second game apparatus
exchange, when with respect to combinations of respective ones of the providing game
data of the first game apparatus and respective ones of the providing game data of the
second game apparatus, it is determined that first providing game data that is one of the
20 providing game data of the first game apparatus satisfies the exchange condition brought
into correspondence with second providing game data that is one of the providing game
data of the second game apparatus, and it is determined that the second providing game
data satisfies the exchange condition brought into correspondence with the first providing
game data, the first providing game data being satisfying the exchange condition for the
25 — second providing game data. More specifically, the providing game data designating

~~means~~ (20, 38) is able to designate the plurality of providing game data, the exchange
condition setting ~~means~~ (20, 38) sets the exchange condition data in such a manner as to
correspond to each of the providing game data, and the game data exchange ~~means~~ of the
first game apparatus (20) and the game data exchange ~~means~~ of the second game
5 apparatus (20) compare for each combinations or sets of the respective ones of the
providing game data of the first game apparatus and the respective ones of the providing
game data of the second game apparatus. Then, when it is determined the first providing
game data that is one of the providing game data of the first game apparatus satisfies the
exchange condition brought into correspondence with the second providing game data
10 that is one of the providing game data of the second game apparatus, and it is determined
that the second providing game data satisfies the exchange condition brought into
correspondence with the first providing game data, the first providing game data and the
second providing game data are exchanged with each other. That is, a number of
providing game data can be designated, capable of increasing a possibility of satisfying
15 the exchange condition. Furthermore, the exchange condition is settable for each
providing game data, capable of realizing the exchange desired by the player.

another illustrative embodiment
In the ~~other~~ aspect of the ~~present invention~~, the game system, further comprising: a
selecting ~~means~~ for selecting at least one of the game data stored in the game data storing
~~means~~; a game program storing ~~means~~ for storing a game program; and a game program
20 executing ~~means~~ for executing the game program by causing the game data selected by
the selecting ~~means~~ to appear in a virtual game world, wherein the game data exchange
~~means~~ does not perform the determination whether or not the exchange condition is
satisfied and the exchange of the providing game data with respect to the game data
selected by the selecting ~~means~~ out of the providing game data designated by the
25 providing game data designating ~~means~~. More specifically, the selecting ~~means~~ (20)

— selects at least one of the game data stored in the game data storing ~~means~~ (28 or 44). The game program storing ~~means~~ (42) stores the game program, and the game program ~~executing means~~ (20) executes the game program by causing the game data selected by the selecting ~~means~~ (20) to appear in the virtual game world. Then, the game data exchange ~~means~~ (20) does not perform a determination whether or not the exchange condition is satisfied and the exchange of the providing game data with respect to the game data selected by the selecting ~~means~~ (20) out of the providing game data designated by the providing game data designating ~~means~~ (20, 38). It is noted that it is appropriate that only the determination whether or not the exchange condition is satisfied is not performed. This is because no determination is performed ^{that} causes no exchange of the game data. Thus, the exchange is not performed with respect to the game data used (appearing) in the virtual game, causing no inconvenience.

In a further embodiment of the present invention, a game system, further comprising an identifying information exchange ~~means~~ for exchanging identifying information of a game apparatus with the specific game apparatus; and a presenting ~~means~~ for presenting to the player the identifying information of the specific game apparatus that satisfies both of the exchange conditions when the inquiring ~~means~~ inquires of the player whether or not to exchange. More specifically, the identifying information exchange ~~means~~ (14, 20) exchanges the identifying information (UserName) of the game apparatus (10) with the specific game apparatus (10). The presenting ~~means~~ (18, 20, S128) presents to the player the identifying information of the specific game apparatus that satisfies both of the exchange conditions when the inquiring ~~means~~ (18, 20, S128, S129) inquires of the player whether or not to exchange. It is possible to determine whether or not to perform the exchange while confirming a person with whom the exchange is performed, ^{which is} being convenient. Specifically, the ^{illustrative embodiment} present invention

communicates with a number of game apparatuses by use of ~~the~~ short-distance radio communication, and there are cases where the communication destination cannot be specified. Thus, it is meaningful to know the information of the person to whom the game data of player's own is applied.

5 In another embodiment of the present invention, the game apparatus, further
— comprising: a display ~~means~~^S; and an electric power control ~~means~~ for controlling a power
— supply to the display ~~means~~, wherein the exchange desire transmitting ~~means~~^S, the
— exchange desire receiving ~~means~~^S, and the game data exchange ~~means~~^S execute their
— processes while the power supply to the display ~~means~~ is suspended by the electric power
10 — control ~~means~~, the electric power control ~~means~~ performs the power supply to the display
— ~~means~~ at a timing relating to a process of the game data exchange ~~means~~^S, and the display
— ~~means~~ displays information relating to the exchange. More specifically, the game
— apparatus (10) is provided with the display ~~means~~ (18). The electric power control ~~means~~
— (20, 22) controls the power supply to the display ~~means~~ (18). The exchange desire
15 — transmitting ~~means~~^S (20, S167, S197), the exchange desire receiving ~~means~~^S (20, S155,
— S185, S211) and the game data exchange ~~means~~^S (20, S105 to S109, S135 to S139)
— executes their processes while the power supply to the display ~~means~~ (18) is suspended
— by the electric power control ~~means~~ (20, 22). Furthermore, the electric power control
— ~~means~~ (20, 22) starts (restart) the power supply to the display ~~means~~ (18) at ^{a given} ~~the~~ timing
20 (e.g., timing when another game apparatus that satisfies the exchange condition is found,
— timing to inquire of the user whether or not to perform the exchange, or timing when the
— exchange is completed) relating to a process of the game data exchange ~~means~~^S (20, S105
— to S109, S135 to S139). Thereupon, the display ~~means~~ (18) displays the information
— relating to the exchange (information of the character satisfying the exchange condition
25 — possessed by other person, the information of the character lost through the exchange,

user name of a person with whom the exchange is performed, and so on). Thus, it is possible to search a person who satisfies the exchange condition while reducing power consumption.

5 In ~~the other~~ ^{another} embodiment of the present invention, the game apparatus, further comprising: ~~an attached means for detachably being attached with a medium in which a~~ ^{ment medium that allows} game program, game identifying information that is identifying information of the game program, and the game data are stored; ~~a reading means for reading, when the medium is~~ ^{to be detached} attached to the ~~attached means~~ ^{ment medium}, the game program, the game identifying information, and the game data from the medium; and a game identifying information exchange ~~means~~ ^{ES} for exchanging the game identifying information read by the ~~reading means~~ ^{ES} with the specific game apparatus, wherein the game data exchange ~~means~~ ^{ES} exchanges the providing game data with the game data exchange ~~means~~ ^{ES} of the specific game apparatus when a coincidence of the game identifying information is indicated. More specifically, the game apparatus (10) is the ~~attached means~~ ^{ment medium} (40) being detachably attached with the medium (16) in which the game program, the game identifying information (GameName) that is identifying information of the game program, and the game data are stored. The ~~reading means~~ ^{ES} (20, 22) reads the game program, the game identifying information, and the game data from the medium (16) when the medium (16) is attached to the ~~attached~~ ^{ment} means (40). The game identifying information exchange ~~means~~ ^{ES} (14, 20, 22) exchanges the game identifying information read by the ~~reading means~~ ^{ES} (20, 22) with the specific game apparatus (10). The game data exchange ~~means~~ ^{ES} (20, S105 to S109, S135 to S139) exchanges the providing game data with the game data exchange ~~means~~ ^{ES} (20, S105 to S109, S135 to S139) of the specific game apparatus (10) when the coincidence of the game identifying information is indicated ("YES" in S155, S185, S211). That is, it is possible to determine the exchange condition with only the person who executes the same

game, reducing waste.

A game apparatus according to the present invention, comprising: a game data
— storing ~~means~~ for storing game data; a providing game data designating ~~means~~ for
designating providing game data being game data that is allowed to be provided to
5 — another game apparatus out of the game data stored in the game data storing ~~means~~; an
— exchange condition setting ~~means~~ for setting exchange condition data indicative of an
exchange condition that is a condition of game data desired to be provided from said
— another game apparatus in exchange for a provision of the providing game data to said
— another game apparatus; a communication ~~means~~ for performing short-distance radio
10 — communication with another game apparatus; an exchange desire transmitting ~~means~~ for
— broadcasting by use of the communication ~~means~~ exchange desired data to other game
— apparatus(es) without specifying a destination address; an exchange desire receiving ~~means~~
— ~~means~~ for receiving by use of the communication ~~means~~ the exchange desired data from
— another game apparatus; and a game data exchange ~~means~~ for exchanging the game data
15 — with a specific game apparatus by use of the communication ~~means~~. The game data
— exchange ~~means~~ determines, by communicating with the specific game apparatus at least
one of attribute information relating to the providing game data and the exchange
— condition data by use of the communication ~~means~~, in association with the game data
— exchange ~~means~~ of the specific game apparatus whether or not the providing game data of
20 — its own satisfies the exchange condition of the specific game apparatus, and whether or
not the providing game data of the specific game apparatus satisfies the exchange
condition of its own, and exchanges in a case that it is determined both of the exchange
conditions are satisfied, the providing game data of its own for the providing game data of
the specific game apparatus by communicating with the specific game apparatus by use of
25 — the communication ~~means~~.

More specifically, the game apparatus (10) is provided with the game data storing means (28 or 44) in which the game data is stored. The providing game data designating means (20, 38, S45 to S57, S67) designates the providing game data that is game data allowed to be provided to another game apparatus (10) out of the game data stored in the game data storing means (28 or 44). The exchange condition setting means (20, 38, S59 to S67) sets the exchange condition data indicative of the exchange condition that is a condition of the game data desired to be provided from said another game apparatus in exchange for the provision of the providing game data to said another game apparatus (10). The communication means (14) performs short-distance radio communication with another game apparatus (10). The exchange desire transmitting means (20, S167, S197) broadcasts by use of the communication means (14) the exchange desired data to other game apparatus(es) (10) without specifying the destination address. The exchange desire receiving means (20, S155, S185, S211) receives by use of the communication means (14) the exchange desired data from another game apparatus (10). The game data exchange means (20, S105 to S109, S135 to S139) exchanges the game data with a specific game apparatus (10) by use of the communication means (14). For example, the game data exchange means (20, S105 to S109, S135 to S139) communicates with the specific game apparatus at least one of attribute information relating to the providing game data and the exchange condition data by use of the communication means (14). Thus, game data exchange means (20, S105 to S109, S135 to S139) determines in association with the game data exchange means (20, S105 to S109, S135 to S139) of the specific game apparatus (10) whether or not the providing game data of its own satisfies the exchange condition of the specific game apparatus (10), and whether or not the providing game data of the specific game apparatus (10) satisfies the exchange condition of its own, and exchanges in a case that it is determined both of the exchange conditions

are satisfied, the providing game data of its own for the providing game data of the specific game apparatus (10) by communicating with the specific game apparatus (10) by use of the communication ~~means~~ (14).

According to the ~~present invention~~ ^{illustrative embodiment}, the above-described game system can be constructed of the plurality of game apparatuses ~~having~~ ^{of} the same kind. That is, for a maker of the game apparatus, one kind of the game apparatus suffices to be placed on the market. For the player also, merely purchasing one game apparatus enables communications with any apparatus, and therefore, it is convenient for the player.

In one aspect of the present invention, a switching ~~means~~ for alternately executing a process of the exchange desire transmitting ~~means~~ and a process of the exchange desire receiving ~~means~~ is further provided. More specifically, the switching ~~means~~ (20, S153, S165, S183, S195, S209) alternately switches the process of the exchange desire transmitting ~~means~~ (20, S167, S197) and the process of the exchange desire receiving ~~means~~ (20, S155, S185, S211). Therefore, it is possible to surely communicate with another game apparatus, and exchange the game data.

In another aspect of the present invention, the switching ~~means~~ alternately repeats a first period for broadcasting the exchange desired data by the process of the exchange desire transmitting ~~means~~ and a second period for attempting to receive the exchange desired data by the process of the exchange desire receiving ~~means~~, further comprising a period's length setting ~~means~~ for variably setting a length of at least one of the first period and the second period. More specifically, the switching ~~means~~ (20, S153, S165, S183, S195, S209) alternately repeats the first period and the second period. In the first period, the exchange desired data is broadcasted by the process of the exchange desire transmitting ~~means~~ (20, S167, S197). In the second period, the exchange desired data is attempted to be received by the process of the exchange desire receiving ~~means~~ (20,

— S155, S185). The period's length ~~setting means~~^{ES} (20, S151, S181) variably (at random) sets the length of at least one of the first period and the second period.

Herein, the game apparatus executing the process of the first period and the game apparatus executing the process of the second period can establish a connection with each other, and the game apparatus executing the process of the first period and the game apparatus executing the process of the first period, or the game apparatus executing the process of the second period and the game apparatus executing the process of the second period cannot establish a connection with each other. Thus, if the first period and the second period are fixed, it becomes impossible to establish a connection between the game apparatuses having the coincident periods all the while. Thus, in the invention, at least one of the first period and the second period are variably set and repeated, ~~and~~ therefore, a repetition of the first period and the second period is never constantly coincident among a plurality of game apparatuses. Accordingly, it is possible to surely communicate with another game apparatus, and exchange the game data.

15 — In ~~the other~~^{another} aspect of the ~~present invention~~^{illustrative embodiment}, the ~~switching means~~^{ES} alternately repeats a first period for broadcasting the exchange desired data by the process of the exchange desire transmitting ~~means~~^{ES} and a second period for attempting to receive the exchange desired data by the process of the exchange desire receiving ~~means~~^{ES}, further comprising a period's starting point ~~setting means~~^{ES} for variably setting a starting point of at least one of the first period and the second period. More specifically, the starting point of at least one of the first period and the second period described above is variably (at random) set. In this case also, it is possible to surely communicate with another game apparatus, and exchange the game data.

— Another game apparatus according to the ~~present invention~~^{illustrative embodiment}, comprising: a game data storing ~~means~~^{ES} for storing game data; a providing game data designating ~~means~~^{ES} for

designating providing game data that is allowed to be provided to another game apparatus

— out of the game data stored in the game data storing ~~means~~^{of}; an exchange condition setting ~~means~~^{of}

— ~~means~~ for setting exchange condition data indicative of an exchange condition that is a condition of game data desired to be provided from said another game apparatus in

5 exchange for a provision of the providing game data to said another game apparatus; a

— communication ~~means~~^{of} for performing short-distance radio communication with another

— game apparatus; a connection establishing ~~means~~^{of} for performing by use of the

— communication ~~means~~^{of} a process to establish a connection with a specific game apparatus

— by a radio communication; and a game data exchange ~~means~~^{of} for exchanging the

10 providing game data for game data of the specific game apparatus that satisfies the

— exchange condition by use of the communication ~~means~~^{of}. The connection establishing ~~means~~^{of}

— ~~means~~ executes a first connection establishing process by broadcasting connection

requiring data for establishing a connected state with another game apparatus which has

received the connection requiring data, or executes a second connection establishing

15 process by receiving the connection requiring data that is transmitted from another game

apparatus for establishing the connected state with said another game apparatus which

— has broadcasted the connection requiring data, and the game data exchange ~~means~~^{of}

— determines, by communicating with said ~~another~~ game apparatus at least one ~~of~~ attribute

— ~~information~~ relating to the providing game data and the exchange condition data by use of

20 — the communication ~~means~~^{of}, in association with the game data exchange ~~means~~^{of} of said

— ~~another~~ game apparatus, whether or not the providing game data of its own satisfies the

— exchange condition of said ~~another~~ game apparatus, and whether or not the providing

— game data of said ~~another~~ game apparatus satisfies the exchange condition of its own, and

exchanges, in a case that it is determined both of the exchange conditions are satisfied, the

25 — providing game data of its own for the providing game data of said ~~another~~ game

- apparatus by communicating with said ~~another~~ game apparatus by use of the
- communication ~~or means~~.

In another game also, the above-described game system is constructed of the plurality of game apparatuses having the same kind as in the game apparatus described

5 — above. That is, there is no need to place ~~both~~ of the game apparatus having the first connection establishing processing function and the game apparatus having the second

— connection establishing processing function on the market; ~~and~~ one kind of the game apparatus suffices to be placed on the market. For the player also, merely purchasing one game apparatus enables communications with any apparatus, being convenient for the

10 player.

— In one aspect of the ~~present invention~~, ^{illustrative embodiment} the game apparatus further comprising ~~a~~ ^{ES} a switching means ^{that} ~~having a function of executing~~ the first connection establishing process

— and ~~a function of executing~~ ^{ES} the second connection establishing process for alternately executing the first connection establishing process and the second connection

15 — establishing process. Accordingly, it is possible to ^{reliably} ~~surely~~ communicate with another game apparatus, and exchange the game data as in the above-described game apparatus.

— In another aspect of the ~~present invention~~, ^{illustrative embodiment} the switching means ~~alternately repeats~~ a first period for broadcasting the connection requiring data by the first connection establishing process and a second period for attempting to receive the connection

20 requiring data by the second connection establishing process, and further comprising a period's length setting means ^{for} ~~for~~ variably setting a length of at least one of the first period

— and the second period. Accordingly, it is possible to ^{reliably} ~~surely~~ communicate with another game apparatus, and exchange the game data as in the above-described game apparatus.

— In the other aspect of the present invention, the switching means ~~alternately~~ repeats a first period for broadcasting the connection requiring data by the first

25

connection establishing process and a second period for attempting to receive the connection requiring data by the second connection establishing process, and further comprising a period's starting point setting ^{means} for variably setting a starting point of at least one of the first period and the second period. Accordingly, it is possible to ^{reliably} ~~surely~~ communicate with another game apparatus, and exchange the game data as in the above-described game apparatus.

A storage medium storing a game program according to the ^{illustrative embodiment} ~~present invention~~, and the game program is executed by each game apparatus in a game system that is provided with a plurality of mobile game apparatuses. Each game apparatus, comprising ^{ES} a processor; a game data storing ^{means} for storing game data; and a communication ^{means} for performing short-distance radio communication with said ~~another~~ game apparatus.

— The game program makes the processor of the game apparatus execute ~~following steps of~~:
a providing game data designating step for designating providing game data that is allowed to be provided to another game apparatus out of the game data stored in the game data storing ^{ES} means; an exchange condition setting step for setting exchange condition data indicative of an exchange condition that is a condition of game data desired to be provided from said another game apparatus in exchange for a provision of the providing game data to said another game apparatus; an exchange desire transmitting step for broadcasting by use of the communication ^{ES} means exchange desired data to other game apparatus(es) without specifying a destination address; an exchange desire receiving step for receiving by use of the communication ^{ES} means the exchange desired data that is transmitted from another game apparatus; and a game data exchange step for determining, by communicating with the specific game apparatus at least one of attribute information relating to the providing game data and the exchange condition data by use of the communication ^{ES} means, in association with said another game apparatus whether or

not the providing game data of its own satisfies the exchange condition of the specific game apparatus, and whether or not the providing game data of the specific game apparatus satisfies the exchange condition of its own, and exchanges, in a case that it is determined both of the exchange conditions are satisfied, the providing game data of its own for the providing game data of the specific game apparatus by communicating with the specific game apparatus by use of the communication ~~means~~.^{es}

Also in the storage medium storing the game program, it is possible to exchange the game data with ease as in the above-described game system.

In a storage medium storing a game program according to the present invention, the game program is executed by respective game apparatuses in a game system that is provided with the plurality of mobile game apparatuses. Each game apparatus, comprising: a processor; a game data storing ~~means~~^{es} for storing game data; and a communication ~~means~~^{es} for performing short-distance radio communication with another game apparatus. The game program makes the processor of the game apparatus execute following steps of: a providing game data designating step for designating providing game data that is allowed to be provided to another game apparatus out of the game data stored in the game data storing ~~means~~^{es}; an exchange condition setting step for setting exchange condition data indicative of an exchange condition that is a condition of game data desired to be provided from said another game apparatus in exchange for a provision of the providing game data to said another game apparatus; a connection establishing step for executing a first connection establishing process by broadcasting connection requiring data for establishing a connected state with another game apparatus which has received the connection requiring data, or executes a second connection establishing process by receiving the connection requiring data that is transmitted from another game apparatus for establishing the connected state with said another game apparatus which

has broadcasted the connection requiring data; and a game data exchange step for determining, by communicating with said another game apparatus at least one of attribute information relating to the providing game data and the exchange condition data by use of the communication means, in association with said another game apparatus whether or not the providing game data of its own satisfies the exchange condition of said another game apparatus, and whether or not the providing game data of said another game apparatus satisfies the exchange condition of its own, and exchanges, in a case that it is determined both of the exchange conditions are satisfied, the providing game data of its own for the providing game data of said another game apparatus by communicating with said another game apparatus by use of the communication means.

Also in the invention of the storage medium storing the game program, it is possible to exchange the game data with ease as in the above-described another game system.

A game data exchange method according to the present invention is constructed of a plurality of mobile game apparatuses, and is a game data exchange method of a game system for exchanging the game data between the respective game apparatuses. Each game apparatus, comprising: a game data storing means for storing game data; a providing game data designating means for designating providing game data that is allowed to be provided to another game apparatus out of the game data stored in the game data storing means; an exchange condition setting means for setting exchange condition data indicative of an exchange condition that is a condition of game data desired to be provided from said another game apparatus in exchange for a provision of the providing game data to said another game apparatus; a communication means for performing short-distance radio communication with another game apparatus; an exchange desire transmitting means for broadcasting by use of the communication means exchange

desired data to other game apparatus(es) without specifying a destination address; an
— exchange desire receiving ~~means~~^{es} for receiving by use of the communication ~~means~~^{es} the
— exchange desired data from another game apparatus; and a game data exchange ~~means~~^{es} for
exchanging the game data with a specific game apparatus by use of the communication ~~means~~^{es}
5 ~~means~~, wherein (a) a first game apparatus out of the plurality of game apparatuses
— transmits the exchange desired data by use of the exchange desire transmitting ~~means~~^{es},
and a second apparatus out of the plurality of game apparatuses receives the exchange
— desired data, and (b) the game data exchange ~~means~~^{es} of the first game apparatus and the
— game data exchange ~~means~~^{es} of the second game apparatus determine, by communicating
10 — at least one of attribute information relating to the providing game data and the exchange
— condition data by use of the communication ~~means~~^{es}, whether or not the providing game
data of the first game apparatus satisfies the exchange condition of the second game
apparatus, and whether or not the providing game data of the second game apparatus
satisfies the exchange condition of the first game apparatus, and exchange, in a case both
15 of the exchange conditions are satisfied, the providing game data of the first game
apparatus for the providing game data of the second game apparatus.

Also in the invention of the game data exchange method, it is possible to exchange
the game data with ease as in the above-described game system.

— Another game data exchange method according to the ~~present invention~~^{illustrative embodiment} is
20 constructed of a plurality of mobile game apparatuses, and is a game method of the game
system for exchanging the game data between the respective game apparatuses. Each
— game apparatus, comprising ~~es~~^{es} a game data storing ~~means~~^{es} for storing game data; a
— providing game data designating ~~means~~^{es} for designating providing game data that is
allowed to be provided to another game apparatus out of the game data stored in the game
25 — data storing ~~means~~^{es}; an exchange condition setting ~~means~~^{es} for setting exchange condition

data indicative of an exchange condition that is a condition of game data desired to be
 provided from said another game apparatus in exchange for a provision of the providing
 game data to said another game apparatus; a communication means for performing
 short-distance radio communication with another game apparatus; a connection
 5 establishing means for performing by use of the communication means a process to
 establish a connection with a specific game apparatus by radio communication; and a
 game data exchange means for exchanging the game data with the specific game
 apparatus by use of the communication means, wherein (a) in a first game apparatus and a
 second game apparatus out of the plurality of game apparatuses, the connection
 10 establishing means of one game apparatus executes a first connection establishing
 process by broadcasting connection requiring data for establishing a connected state with
 other game apparatus which has received the connection requiring data, and the
 connection establishing means of the other game apparatus executes a second connection
 establishing process by receiving the connection requiring data for establishing the
 15 connected state with the one game apparatus which has broadcasted the connection
 requiring data, and (b) the game data exchange means of the first game apparatus and the
 game data exchange means of the second game apparatus determine, by communicating
 at least one of attribute information relating to the providing game data and the exchange
 condition data by use of the communication means, whether or not the providing game
 20 data of the first game apparatus satisfies the exchange condition of the second game
 apparatus, and whether or not the providing game data of the second game apparatus
 satisfies the exchange condition of the first game apparatus, and exchange, in a case both
 of the exchange conditions are satisfied, the providing game data of the first game
 apparatus for the providing game data of the second game apparatus by communicating
 25 between the first game apparatus and the second game apparatus by use of the

communication ^{or} means.

Also in the ~~invention~~ ^{illustrative example} of the game data exchange method, it is possible to exchange the game data with ease as in the above-described game system.

The above described objects and other objects, features, aspects and advantages of the present invention will become more apparent from the following detailed description
5 of the ~~present invention~~ ^{illustrative embodiment} when taken in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a block diagram showing one example of a mobile game apparatus
10 utilized in a game system of the ~~present invention~~ ^{an illustrative embodiment};

Figure 2 is an illustrative view showing a memory map of a WRAM provided in a mobile game machine shown in Figure 1;

Figure 3 is an illustrative view showing a memory map of a backup RAM provided in a cartridge shown in Figure 1;

15 Figure 4 is an illustrative view showing one example of a content of an exchange table stored in an exchange table data storing area in a WRAM shown in Figure 3;

Figure 5 is an illustrative view for explaining an outline of a game system utilizing the mobile game apparatus shown in Figure 1 embodiment;

20 Figure 6 is an illustrative view for showing a flow in a case game data are exchanged between a parent device and a child device in a game system of the present invention;

Figure 7 is a flowchart showing one example of a main flow of the mobile game machine shown in Figure 1;

25 Figure 8 is a flowchart showing a part of a game process of the mobile game machine shown in Figure 1;

Figure 9 is a flowchart showing another part of the game process of the mobile game machine shown in Figure 1;

Figure 10 is a flowchart showing the other part of the game process of the mobile game machine shown in Figure 1;

5 Figure 11 is a flowchart showing a further part of the game process of the mobile game machine shown in Figure 1;

Figure 12 is a flowchart showing a part of a character exchange process of the mobile game machine shown in Figure 1;

10 Figure 13 is a flowchart showing another part of the character exchange process of the mobile game machine shown in Figure 1;

Figure 14 is a flowchart showing the other part of the character exchange process of the mobile game machine shown in Figure 1;

Figure 15 is a flowchart showing a further part of the character exchange process of the mobile game machine shown in Figure 1;

15 Figure 16 is an illustrative view showing a method for setting a period during which the mobile game apparatus attempts to connect as a parent device and a period during which the mobile game apparatus attempts to connect as a parent device in a case that the mobile game apparatus shown in Figure 1 searches and connects the communication destination;

20 Figure 17 is an illustrative view showing a parent device packet for broadcasting from the parent device to the child device and a child device packet for transmitting from the child device to the parent device;

Figure 18 is a flowchart showing a communication destination searching and connecting process (1) of the mobile game machine shown in Figure 1;

25 Figure 19 is a flowchart showing a part of a communication destination searching

and connecting process (2) of the mobile game machine shown in Figure 1; and

Figure 20 is a flowchart showing another part of the communication destination searching and connecting process (2) of the mobile game machine shown in Figure 1.

5 **DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS**

A radio communication game system to which the present invention is adapted uses a mobile game apparatus 10 as shown in Figure 1 as an example. In this embodiment, the mobile game apparatus 10 includes a mobile game machine 12 such as a GameBoy Advance (Trademark), for example, a radio communication unit 14 connected
10 to a communication connector 46 of the mobile game machine 12, and a cartridge 16 connected to a cartridge connector 40. That is, in this embodiment, the mobile game apparatus 10 is constructed of the mobile game machine 12, the radio communication unit 14, and the cartridge 16.

The mobile game machine 12 shown in Figure 1 includes a processor 20, and the
15 processor 20 includes a CPU core 22 and a boot ROM 24 related thereto, an LCD controller 26, a WRAM (working RAM: the same below) 28, a VRAM 30, and a peripheral circuit 32. However, the peripheral circuit 32 includes a voice (sound) circuit, a DMA (Direct Memory Access) circuit, a timer circuit, an input/output interface (I/O),
— and etc.

20 In an LCD 18 provided in a front surface of the mobile game machine 12, a displaying signal or an RGB signal in this embodiment is applied from the processor 20, and therefore, a game image is displayed in color on the LCD 18. In addition, an audio signal is applied from the processor 20 to the sound circuit 34, and voices or sound such as a game music and a sound effect is output by the audio signal. Furthermore, a cross
25 key and a start key, a select key, an A button and a B button provided sandwiching the

LCD 18 in the front surface of the mobile game machine 12 are congregated and shown as an operation switch 38, and an operation signal from the operation switch 38 is input into the processor 20. Therefore, the processor 20 executes a process in accordance with an instruction of a player applied through the operation switch 38.

5 Although not illustrated, an electric power is supplied to the LCD 18 from a battery (primary battery or secondary battery), and by setting a predetermined register (LCD power supply register) to 0, the power supply to the LCD 18 is suspended.

— Furthermore, when the value of the register is set to 1, the power supply to the LCD 18 is
— started (restarted). For example, the LCD power supply register is provided within the
10 WRAM 28, and the value thereof is rewritten by the CPU core 22. That is, the CPU core 22 controls the start (on) and suspend (off) of the power supply.

 The mobile game machine 12 has the cartridge connector 40, and the cartridge 16 is connected or inserted into this cartridge connector 40. The cartridge 16 contains a ROM 42 and a backup RAM 44, and a game program for a game (virtual game) to be
15 executed in the mobile game machine 12, a game image (including a character image),
— and etc. are set (stored) in the ROM 42 in advance. The ROM 42 also stores identifying information (“Game Name” to be described later) for identifying the game program to be stored in the ROM 42. The backup RAM 44 stores (saves) progressive data of the game and resultant data of the game.

20 The CPU core 22, when a power source of the mobile game machine 12 is turned on, executes a boot program stored in the boot ROM 24, and performs a start-up process of the mobile game machine 12. Thereafter, the CPU core 22 executes a game program stored in the ROM 42 of the cartridge 16, and executes a game processing while storing in the WRAM 28 temporary data being executed. Furthermore, image data generated

25 through the execution of the game program by the CPU core 22 is stored in the VRAM

30, and the image data stored in the VRAM 30 is output to the LCD 18 by the LCD controller 26.

The mobile game machine 12 is further provided with the communication connector 46 to which a connector 48 of the radio communication unit 14 is connected. It is noted that the mobile game machine 12 used in this embodiment is GameBoy Advance (Trademark) as an example. In this case, the above-described cartridge connector 40 is a 32-pin connector provided at a far side on an upper surface when the LCD 18 is rendered a front surface (front face), and the communication connector 46 is a 6-pin connector provided at a near side on an upper surface.

The radio communication unit 14 includes a baseband IC 50, and the baseband IC 50 includes a ROM 52. The ROM 52 contains an OCD (One-Cartridge Download) program, and other programs, for example, and the baseband IC 50 is operated according to these programs.

It is noted that the One-Cartridge Download program is a program for downloading a program into the child device in an OC mode (one-cartridge mode: a mode in which a game cartridge is attached to the parent device only, and the child device is operated in response to a download of a child device-use program from the parent device cartridge).

The radio communication unit 14 is further provided with an EEPROM 54, and a user's name, for example, is uniquely set to the EEPROM 54. The baseband IC 50 transmits game data transmitted via the connectors 46 and 48 from the game machine 12 and data including the player's name of the EEPROM 54 to an RF (Radio Frequency) – IC56, and the RF – IC 56 modulates the data, and transmits a radio wave from an antenna 58. However, ^{the} an intensity of the radio wave is extremely weak, and is set to so small a

value that the user can use ^{it} without a license under Radio Law. In addition, this radio

communication unit 14 is provided with a power circuit 60. Typically, the power circuit 60 is a battery, and supplies a DC (direct-current) power source to each component of the radio communication unit 14.

5 In addition, in the radio communication unit 14, the radio wave transmitted from another mobile game apparatus is received by the antenna 58, demodulated by the RF-IC 56, and a demodulated signal is input into the baseband IC 50. Therefore, the baseband IC 50 decodes the demodulated signal, decodes the data, and transmits the data to the mobile game machine 12, i.e., the WRAM 28 via the connectors 48 and 46.

10 Figure 2 shows a memory map of the WRAM 28. In this embodiment, the WRAM 28 includes a providing character information area 280, an exchange condition data area 282, a character data area 284, and an exchange table storing area 286.

The providing character information area 280 stores information (character's — kind, level, ~~and~~ etc.) with respect to a character that is selected to be provided to another player or a user (hereinafter, may be briefly referred to as "player") out of game characters (hereinafter, may be briefly referred to as "character") possessed by one 15 player. Herein, providing character information 1 is information indicative of a kind of a providing character, and providing character information 2 is information indicative of a level of the providing character. Furthermore, data stored in the providing character information area 280 is for copying and storing data of the providing character out of data 20 stored in the character data area 284, and in a game data exchange processing, directly referring to the character data area 284 eliminates the need for another providing character information storing area.

A character to be provided to another player out of the possessed characters is selected by inputting (designating) by use of the operation switch 38 of the player, or 25 automatically selected on the basis of progress of the game.

— The exchange condition data area 282 stores information (character's kind, level,
— ~~and~~ etc.) relating to a character required to be provided from another player as an
exchange condition. The kind of the character is set to an exchange condition 1, and the
level thereof is set to an exchange condition 2. The exchange condition is input
5 (designated) by use of the operation switch 38 of the player or automatically determined
on the basis of the progress of the game.

The character data area 284 stores information (character information) with
respect to characters (characters having character names of "Mario", "Luigi", "Koopa",
— "Peach", ~~and~~ etc. in this embodiment) possessed by the player for each character. The
10 — player advances ⁱⁿ an adventure while capturing characters that exist in a game world and
taking them into his party in a virtual game world. Information relating to the characters
thus captured or taken into his party is stored in the character data storing area 284. As
can be understood from Figure 2, the character information includes the kind and level of
the character and an attribute value of the character, i.e., a life force (life) and an offensive
15 power (hit point). For example, the character data area 284 stores first character
information data 284a, and a second character information data 284b in this embodiment.
— ^{if} In a case that the player possesses ~~the~~ characters more than three, third character
— information data, forth character information data, ^{etc.} may be stored successive to the
above description.

20 The character information data (data in the character data area 284) is updated at
— any time in correspondence with the ^{progress} ~~proceeding~~ of the game. For example, when
capturing a new character, the character information with respect to the new character is
— added. Furthermore, in a case of ^a level up the character that has already been captured, a
value of the level of the character is updated.

25 In addition, the character information data is stored (saved) in the backup RAM 44

— in response to an instruction of the player, or in accordance with the ^{progress}proceeding of the game. Therefore, in a case of resuming the game from the portion that the player last played, the character information data stored in the backup RAM 44 is read, and written (loaded) to the character data area 284.

5 Figure 3 shows a memory map of the backup RAM 44. As described above, the backup RAM 44 stores the saved game data, i.e., the character information data. In this embodiment, the backup RAM 44, for example, stores the first character information data 284a and the second character information data 284b.

10 Returning to Figure 2, the exchange table storing area 286 stores a table by which the game data is exchanged when the progress of the game in the virtual game satisfies a predetermined condition. In the table, as shown in Figure 4, an exchange starting condition, an exchange ending condition, providing character designating data, required character designating data are stored in correspondence to the progress of the virtual game. With reference to the table, the providing character and the exchange condition are
15 — set ^{to}in correspondence ~~one~~ to the progress of the virtual game, and this makes it possible to exchange the game data.

 The exchange starting condition is a condition for starting the exchange of the game data, and satisfying the condition causes a state in which a predetermined character becomes exchangeable as described later. For example, as the exchange starting
20 condition, acquiring (obtaining) a specific item, defeating a specific enemy character (non-player character whose action and movement are controlled according to a game program regardless of an operation of the player), saving a specific non-player character (non-player character except for the enemy character), complying with such the
— non-player character, setting in a specific ^{month}month and day (it is possible if one of them),
25 coming at a specific hour, and so forth are relevant in this embodiment.

As the exchange ending condition, the specific month and date (it is possible if one of them, and determined in correspondence with the exchange starting condition), and the specific hour are relevant. It is noted that in the exchange table, an item indicated by a cross bar ^{device} means ^{SS} requiring no specific exchange ending condition; and with respect to the item, exchanging the characters ^{signals} means the end of the exchanging process.

The designating data of the providing character is data for setting the providing character, and includes items (conditions) of the kind and level of the character to be provided. In the item of the kind, the kind (name of the character in this embodiment) of the providing character is described, and in the item of the level, the level of the corresponding character is described. It is determined whether or not a character that satisfies the condition (kind and level) out of the possessed characters is present on the basis of the above description, and in a case that the character that satisfies the condition is present, the character is selected as the providing character, and the information (kind and level of the character, ~~and~~ etc.) with respect to the character is stored in the above-described providing character information area 280. It is noted that the character to be provided can be designated at player's discretion. In this case, a character designated at player's discretion out of the possessed characters is selected as the providing character, and the information with respect to the character is stored in the above-described providing character information storing area 280.

It is noted that as to the exchange table, in a case the player can designate the kind and the level, a description is "at player's discretion" while in a case of not being designated especially, the description is "no designation". This is true hereunder.

The designating data of the required character is data for setting the exchange condition, and includes items (conditions) of the kind and level of the character required to be provided from another player. In the item of the kind, the kind (name of the

character in this embodiment) of the character to be required is described, and in the item of the level, the level of the corresponding character is described. Then, the exchange condition is determined on the basis of the description. It is noted that the kind of the character to be required can be designated at player's discretion. Furthermore, in a case of not being designated especially as to the level, it is possible that a level more than that of the providing character is designated, and it is possible that the level is designated at player's discretion. The exchange condition thus determined is stored in the exchange condition data area 282.

— More specifically, with ^{reference} referring to the exchange table, in ~~the~~ number 1, the exchange starting condition is "acquiring a specific item", and the exchange ending condition is not especially described. As a condition of the providing character, the kind is "Mario", and the level thereof is "5". As a condition of the required character, the kind is "Koopa", and the level thereof is "5". That is, when the player character acquires the specific item in the game world, ~~the~~ having the Mario ^{at} of level 5 ~~is~~ is exchangeable for ~~the~~ Koopa ^{of} of level 5 possessed by another player. In this case, in the providing character information storing area 280, ~~the~~ "Mario" is set to the kind of the providing character, and ~~the~~ "5" is set to the level thereof. Then, in the exchange condition storing area 282, ~~the~~ "Koopa" is set to the kind of the required character, and ~~the~~ "5" is set to the level thereof.

— Furthermore, in ~~the~~ number 4, the exchange starting condition is "specific month and day (April 10)", and the exchange ending condition that is correlated with the exchange starting condition is "specific month and day (April 15)". As the condition of the providing character, the kind is ~~the~~ "Koopa", and the level thereof is "10 or more". As the condition of the required character, the kind of the character is "at player's discretion", and the level thereof is "more than the level of the providing character". That is, the mobile game machine 12 of the present invention is provided with a timer, and a date of

the game world is governed by the timer. Then, during April 10 and April 15 in the game world, a player who possesses a Koopa of level 10 or more is allowed to exchange it with an arbitrary character having a level more than that of the Koopa. For example, a player who possesses a Koopa of level 15 can desire to exchange it with a Luigi having a level
5 more than the level 15. In this case, in the providing character information storing area 280, "Koopa" is set to the kind of the providing character, and "15" is set to the level thereof. Then, in the exchange condition data storing area 282, "Luigi" is set to the kind of the required character, and "15 or more" is set to the level thereof.

Such ~~the~~ exchange table ~~is~~ determined in advance by a developer such as a
10 — programmer, and etc., is stored in the ROM 42 of the cartridge 16 (although not illustrated), and loaded into the WRAM 28 at a time or as necessary after a main power source of the mobile game machine 12 is turned on. The providing character and the exchange condition (required character) are automatically set with reference to the exchange table, but a part or all of them can be set at player's discretion.

15 It is noted that the exchange table shown in Figure 4 is a simple illustration, and there is no need to be restricted thereto.

For example, in the game system of this embodiment, at least two mobile game
— apparatuses 10 shown in Figure 1 are utilized and communicated~~x~~ with each other, and whereby, a player of each mobile game apparatus 10 can enjoy playing the
20 — communication game. That is, a dotted line 64 in Figure 5 indicates a communication~~able~~ range (a range capable of making a communication) of a user's mobile game apparatus 62, and the mobile game apparatus 62 can communicate (radio-communicate) the mobile
— game apparatus existing within the communication~~able~~ range 64. This
— communication~~able~~ range 64 is a range capable of performing a data communication

25 between the parent device and the child device by the above-described weak radio wave,

and any of a plurality of the mobile game apparatuses existing within the
— communicationable range 64 can arbitrarily become the parent device or the child device.

It is noted that in Figure 5, a manner in which mobile game apparatuses having
— the user's names as "Taro", "Ichiro", and "Jiro" exist within the communicationable
5 range 64 of the user's mobile game apparatus 62, and the user's mobile game apparatus
62 radio-communicates with the mobile game apparatus having the user's name of "Jiro"
is displayed.

An operation of the mobile game apparatus 62 for applying for an entry to another
— mobile game apparatus existing within the communicationable range 64 so as to enjoy
10 playing the communication game between a plurality of the game apparatuses is not an
essential content of the present invention, and therefore, a detailed description thereof is
omitted herein.

— When two or more mobile game apparatuses are communicationably connected,
the player of each mobile game apparatus can enjoy playing the communication game
15 described above. It is noted that it is needless to say that each player can enjoy playing
the game by use of the mobile game apparatus of his own, that is, without communicating
— or ^{individually} singly. It is noted that a mode in which a game is played with communication or ^{individually} singly
is referred to as a game mode hereunder.

In addition, the mobile game apparatus 62 can exchange the game data, i.e., the
20 character information data with any one of the mobile game apparatuses exist within the
communicationable range 64. Briefly, with respect to the user's mobile game apparatus
62, if in a state that its power source is turned on, and the game is not played (the game is
not started or the game is over), that is, it is not in the game mode, an exchange mode of
the characters can be set.

25 In an exchangeable state of the exchange mode, the mobile game apparatus 62

— searches another game apparatus that exists within the communicationable range 64 and is similarly in the exchangeable state. At this time, the mobile game apparatus 62 alternately repeats a process of searching the child device as the parent device and a process of searching the parent device as the child device. Then, when finding another communicationable mobile game apparatus, ^{an attempt to establish} the connected state (communicated state) ~~is attempted to be established by~~ the radio communication. A description of the searching and connecting process is made in detail later (see Figure 16 to Figure 20).

When the connected state is established with another mobile game apparatus described above, the user's mobile game apparatus 62 exchanges the providing character information (kind information and level information of the providing character) and ~~the~~ exchange conditions with each other, and determines whether or not the exchange conditions are coincident (matched) with each other. In a case that the exchange conditions are coincident, both of the data of the providing character are exchanged.

Figure 6 is an illustrative view showing a flow of an exchange between two mobile game apparatuses (parent device and child device) in a case that the exchange conditions are coincident with each other. Referring to Figure 6, when the connected state is established between the parent device and the child device, the child device transmits to the parent device ~~the~~ providing character information 1 and providing character information 2 of its own. When receiving the providing character information 1 and the providing character information 2 of the child device, the parent device respectively compares them with the exchange conditions 1 and 2 of its own, and determines whether or not they are coincident with each other. If each of them is coincident, that is, if the providing character information 1 and the providing character information 2 of the child device satisfy the exchange condition 1 and exchange condition 2 of the parent device, the parent device transmits an exchange request to the child device,

and further transmits the providing character information 1 and providing character information 2 of its own to the child device.

When receiving the providing character information 1 and providing character information 2 of the parent device, the child device respectively compares them with the
5 — exchange conditions 1 and 2 of its own, and determines^S whether or not they are coincident. If each of them is coincident, that is, if the providing character information 1 and the providing character information 2 of the parent device satisfy the exchange
— condition 1 and exchange condition 2 of child device's own, ~~that is, the exchange~~
— conditions are satisfied,^{and} the child device transmits to the parent device an exchange
10 response.

Thereupon, the parent device receives the exchange response, and transmits to the child device the character information data of its own providing character (for convenience in writing, referred to as "character A" in Figure 6). Then, the child device transmits to the parent device the character information data of its own providing
15 character (for convenience in writing, referred to as "character B" in Figure 6). Thus, the exchange of the characters is executed between the parent device and the child device.

It is noted that in this embodiment, as shown in Figure 6, the parent device and the child device transmit the providing character information to each other, and then, each of the mobile game apparatuses receiving it determines whether or not the exchange
20 condition is satisfied. However, one mobile game apparatus (e.g., child device) transmits to other mobile game apparatus (e.g., parent device) the providing character information and exchange condition of its own, and then, the parent device may determine whether or not the exchange condition is satisfied at a time.

Furthermore, in this embodiment, as shown in Figure 6, the child device transmits
25 the providing character information, then, the parent device which has received the same

determines whether or not the exchange condition of its own is satisfied, and if it is
— determined that the condition is satisfied, the exchange request is transmitted. This is ^{done} ~~due~~
— to eliminate a needless communication. Specifically, ^{if the} ~~in a case the~~ condition is not
satisfied, the exchange of the characters is interrupted as it is. That is, the providing
5 character is not transmitted from the parent device.

In addition, as described above, the image data of each character is stored in the
ROM 42 of the cartridge 16, and although in order to efficiently lessen a time taken for
the communication by reducing a data amount to be received and transmitted, an
identifying number for designating the kind of the character is exchanged at a time of
10 exchanging the characters in this embodiment, image data, and the like of the character to
be exchanged is exchangeable.

— In embodiments to be described later with ^{reference} ~~referring to~~ Figure 7 ^{et seq.} ~~and the~~
— ~~subsequent~~, an exchange process is executed in parallel with executing the game play
— without discriminating a game mode from an exchange mode. That is, during ~~executing~~
15 — the game play ~~also~~, another game apparatus satisfying the exchange condition is
searched, and when finding another game apparatus satisfying the exchange condition, an
exchange process of the game data is performed. Thus, this makes it possible to play the
— game ^{while} ~~during~~ ^{for} searching another game apparatus that satisfies the exchange condition,
keeping the player from being bored.

20 More specifically, the processor 20 or the CPU core 22 of the mobile game
machine 12 performs a process according to a flowchart shown in Figure 7. When the
main power source of the mobile game machine 12 is turned on, the CPU core 22 starts
— the process, and turns an exchangeable flag off (set to 0) in ~~X~~ step S1. ^{Next} ~~In a succeeding step~~
— ~~S3~~, an attribute value of each character (character possessed in an initial state) such as a
25 — level, a life, and an offensive power is initialized. It is noted that the process in ~~the~~ step

S3 is a process performed only when playing the game at first time, and is not performed

— when playing after the second time and the subsequent.

— In ~~the~~ following ^{step} ~~step~~ S5, a game process (see Figure 8 to Figure 11) described later

— in detail is executed. ~~Then,~~ it is determined whether or not the exchangeable flag is

5 — turned on (=1) in ~~a~~ step S7. If “NO” in ~~the~~ step S7, that is, if the exchangeable flag is turned off (=0), determining that it is impossible to exchange the characters, the process

— directly returns to ~~the~~ step S5.

— On the other hand, if “YES” in ~~the~~ step S7, that is, if the exchangeable flag is turned on (=1), determining that it is possible to exchange the characters, a character

10 — exchange process (Figure 12 to ~~Figure~~ ^{described} 15) ~~described~~ later is executed in ~~a~~ step S9, and

— then, the process returns to ~~the~~ step S5.

As shown in Figure 8, when the game process is started, it is determined whether

— or not a battle is started in ~~a~~ step S21. That is, it is determined whether or not to shift to a battle scene. Although not illustrated, when a leading character (player character)

15 — encounters an opponent character (enemy character), the battle scene is started. If “NO”

in ~~the~~ step S21, that is, if the battle is not started, the process proceeds to ~~a~~ step S43 shown in Figure 10. On the other hand, if “YES” in ~~the~~ step S21, that is, if the battle is started, a

battle processing is executed in ~~a~~ step S23, and an experienced value of a character that

— enters the battle out of characters possessed by the player character is increased in ~~a~~ step

20 — S25.

It is noted that some of the plurality of characters stored in the character data area 284 are selected by the player before the game, and in the game processing shown in Figure 8, the selected characters are used.

Furthermore, it is noted that although not illustrated in detail, in the battle

25 — processing in the step S23, for example, the characters possessed by the player character

and the enemy character are attacked with each other. In the battle processing, an offensive turn is alternately changed between the player character and the enemy character. Then, when the life of all the characters possessed by the player character or the enemy character is ended (becomes 0), the battle is ended.

5 In addition, the reason why the experienced value of the character that enters the battle out of the characters possessed by the player character is increased in ~~the~~ step S25 is based on the premise that the player character wins the battle. It is noted that ^{if} in a case that the player character loses the battle in the battle processing, the game is ended (game over), and then, the game processing is directly ended (returned).

10 — ^{Next,} In ~~a~~ succeeding step S27, it is determined whether or not the experienced ~~X~~ value of a certain character is more than a predetermined value. That is, it is determined whether or not the character having the experienced ~~X~~ value more than the predetermined value out of the characters possessed by the player character is present. Herein, the predetermined value is a value set by a developer such as a programmer, ~~and~~ etc. in advance, and is updated according to the progress of the game or depending on the level of the character.

15 — If “NO” in ~~the~~ step S27, that is, if the experienced value of the character is not more than the predetermined value, the process directly proceeds to ~~X~~ step S38 shown in Figure 9. On the other hand, if “YES” in ~~the~~ step S27, that is, if the experienced value of the character is more than the predetermined value, the character is leveled up, and the life and offensive power thereof are increased in ~~a~~ step S29. That is, the character information data with respect to the character stored in the character data area 284 of the WRAM 28 is updated.

20 — In ~~a~~ succeeding step S31, it is determined whether or not the character is set to the providing character. If “NO” in ~~the~~ step S31, that is, if the character is not set to the providing character, the process directly proceeds to ~~X~~ step S35 shown in Figure 9.

— However, if “YES” in ~~the~~ step S31, that is, if the character is set to the providing character, the data of the providing character information 2 stored in the providing character information area 280 of the WRAM 28 is updated, that is, the data of the level is
— updated in ~~a~~ step S33, and then, the process proceeds to ~~the~~ step S35. This is because ~~that~~
5 when the level of the character data that is set to the providing character is increased, the
— providing character information is required to be changed corresponding ~~thereto~~.

— In ~~the~~ step S35 shown in Figure 9, it is determined whether or not the exchange condition 2 is based on the providing character information 2. That is, it is determined whether or not the level of the required character is determined based on the level of the
10 — providing character. For example, in this embodiment, as in ~~the~~ number 4 and ~~the~~ number
— 5 of the exchange table shown in Figure 4, ~~in a case~~ ^{if} the level indicated by the exchange condition 2 and the level indicated by the providing character information 2 are
— coincident with each other, a case of exceeding the level is applied. If “NO” in ~~the~~ step
S35, that is, if the exchange condition 2 is not based on the providing character
15 — information 2, the process directly proceeds to ~~the~~ step S38. However, if “YES” in ~~the~~
step S35, that is, if the exchange condition 2 is based on the providing character
information 2, the data of the exchange condition 2 stored in the exchange condition data
— storing area 282 of the WRAM 28 is updated in ~~a~~ step S37, and then, the process proceeds
— to ~~the~~ step S38. For example, ~~in a case of~~ ^{if} the number 4, a Koopa of level 15 is set to the
20 providing character, and when the Koopa is leveled up to a level 16, the data of the
exchange condition 2 is changed from “level 15 or more” to “level 16 or more”.

— In ~~the~~ step S38, a processing of the virtual game except for the battle processing is performed. For example, a processing of moving the player character and the enemy character in the virtual game world, a processing of adding, when the player character
25 acquires an item existing in the game world, the item to player character’s possessing

item list, a processing of generating an event for saving a villager character existing in the
— game world, and etc. are performed. After the process in the step S38, the process
— proceeds to ~~X~~ step S39.

5 — In ~~the~~ step S39, it is determined whether or not the game data (i.e., the character
— information data) is to be saved. Herein, a determination is made depending on whether or
not an operation of the player is present, or whether or not the predetermined event is
— generated. If “NO” in ~~the~~ step S39, that is, if the character information data is not saved,
— the game processing is returned as it is. On the other hand, if “YES” in ~~the~~ step S39, that
is, if the character information data is saved, all the character information data stored in
10 the character data storing area 284 of the WRAM 28 is read and written (overwritten) to
the backup RAM 44 provided in the cartridge 16 in ~~a~~ step S41, and then, the process
returns the game processing.

— Furthermore, if it is determined the battle is not started in ~~the~~ step S21 shown in
— Figure 8, it is determined whether or not an exchange event is generated in ~~a~~ step S43
15 shown in Figure 10. That is, it is determined whether or not the progress of the virtual
game satisfies any one of the exchange starting conditions of the exchange table shown in
— Figure 4. If “NO” in ~~the~~ step S43, that is, if no exchange starting condition is satisfied,
— the process proceeds to ~~X~~ step S71 shown in Figure 11.

— On the other hand, if “YES” in ~~the~~ step S43, that is, if any one of the exchange
20 starting conditions is satisfied, it is determined whether or not the kind of the providing
character corresponding to the exchange starting condition is “at player’s discretion” with
— reference to the exchange table in ~~a~~ step S45. If “YES” in ~~the~~ step S45, that is, if the kind
of the providing character is “at player’s discretion”, a providing character out of the
— possessed characters is designated by the player in ~~a~~ step S47, and then the process
25 — proceeds to ~~X~~ step S59 shown in Figure 11. For example, in ~~the~~ step S47, a selection

screen in which a list of the possessed characters is displayed so as to select the providing character is displayed on the LCD 18, and by viewing the selection screen, the player selects (designates) a desired providing character by operating the operation switch 38. Hereinafter, for convenience in writing, the character selected as the providing character is called as a "character X".

5 — If "NO" in ~~the~~ step S45, that is, if the kind of the providing character is not "at player's discretion", it is determined whether or not the character designated in the kind of the providing character is possessed with reference to the exchange table in ~~X~~ step S49.

— If "NO" in ~~the~~ step S49, that is, if the character designated in the kind of the providing character is not possessed, it is determined the character to be exchanged is not possessed, the game processing is ended as it is as shown in Figure 9. On the other hand, if "YES" in ~~the~~ step S49, that is, if the character designated in the kind of the providing character is possessed, the character is rendered ~~the~~ character X (i.e., designated as the providing character), ^{and} it is determined whether or not the level of the providing character is "any level" with reference to the exchange table in ~~X~~ step S51.

15 — If "YES" in ~~the~~ step S51, that is, if the level of the providing character is "any level", the process directly proceeds to ~~X~~ step S55. On the other hand, if "NO" in ~~the~~ step S51, that is, if the level of the providing character is not "any level", it is determined ^{whether} the character X satisfies the level of the providing character in ~~X~~ step S53. That is, it is determined whether or not the level included in the character information data of the character X is the same as that of the providing character.

20 — If "NO" in ~~the~~ step S53, that is, if the character X does not satisfy the level of the providing character, it is determined the character X is not exchangeable, and then, the game process is returned as it is. On the other hand, if "YES" in ~~X~~ step S53, that is, if the character X satisfies the level of the providing character, the process proceeds to ~~the~~ step

25 —

S55.

— In ~~the~~ step S55, a confirmation message ^{asking, if} ~~indicating that~~ “IS CHARACTER X EXCHANGEABLE?” is displayed on the LCD 18. Then, it is determined whether or not
— the player desires to exchange the player character X in ~~the~~ step S57. That is, it is
5 determined whether or not the player consents to exchange the character X by operating the operation switch 38.

— If “NO” in ~~the~~ step S57, that is, if the player does not desire to exchange the
— character X, the game process is ended as it is. On the other hand, if “YES” in ~~the~~ step
— S57, that is, if the player desires to exchange the character X, the process proceeds to ~~the~~
10 step S59 shown in Figure 11.

Thus, the player is inquired whether or not the character X is to be exchanged, and therefore, it is possible to prevent the character that is not intended by the player from being erroneously exchanged.

Next, it is determined whether or not the kind of the required character
15 corresponding to the exchange starting condition is “at player’s discretion” with reference
— to the exchange table in ~~the~~ step S59. If “NO” in ~~the~~ step S59, that is, if the kind of the
— required character is not “at player’s discretion”, the process directly proceeds to ~~a~~ step
— S63. However, if “YES” in ~~the~~ step S59, that is, if the kind of the required character is “at
— player’s discretion” in ~~a~~ step S61, the kind of the required character is designated by the
20 — player, and then, the process proceeds to ~~the~~ step S63. In ~~a~~ step S61, for example, the
selection screen on which a list of all (or main) characters appearing in the game is
displayed so as to cause the player to select an arbitrary character from the list is
displayed on the LCD 18, and the player selects (designates) a desired required character
by viewing the selection screen.

25 — In ~~the~~ step S63, it is determined whether or not the level of the required character

corresponding to the exchange starting condition is "at player's discretion" with reference
— to the exchange table. If "NO" in ~~the~~ step S63, that is, if the level of the required
— character is not "at player's discretion", the process directly proceeds to ~~a~~ step S67. On
— the other hand, if "YES" in ~~the~~ step S63, that is, if the level of the required character is "at
5 — player's discretion", the level of the required character is designated by the player in ~~a~~
— step S65, and then, the process advances a process to ~~a~~ step S67. The designation of the
level of the required character is approximately the same as the designation of the kind of
— the character in ~~the~~ above-described steps S47 and S61, and therefore, a detailed
description is omitted herein.

10 — In ~~the~~ step S67, each of the providing character information 1, ~~the~~ providing
— character information 2, ~~the~~ exchange condition 1, and ~~the~~ exchange condition 2 ^{are} ~~is~~ set
— (determined). That is, ~~the~~ providing character information 1 and ~~the~~ providing character
— information 2 are stored in ~~the~~ providing character information area 280, and ~~the~~
— exchange condition 1 and ~~the~~ exchange condition 2 are stored in ~~the~~ exchange condition
15 — data area 282. Then, the exchangeable flag is turned on (set to 1) in ~~a~~ step S69, and then,
— the game processing is returned as shown in Figure 9. In this embodiment, the kind of ~~the~~
— character X is set to the providing character information 1, the level of ~~the~~ character X is
— set to ~~the~~ providing character information 2, the kind of the required character is set to ~~the~~
exchange condition 1, and the level of the required character is set to the exchange
20 — condition 2 in ~~the~~ step S67. That is, the kind and level of the providing character and the
required character are respectively set according to a designation by the player or a
definition of the exchange table.

Furthermore, if it is determined the exchange starting condition is not satisfied in
— ~~the~~ step S43 shown in Figure 10, the process proceeds to Figure 11, and then, it is
25 — determined whether or not the exchange ending condition is satisfied in ~~a~~ step S71. If

— “NO” in ~~the~~ step S71, that is, the exchange ending condition is not satisfied, the game
— process is directly returned. On the other hand, if “YES” in ~~the~~ step S71, that is, if the
exchange ending condition is satisfied, the providing character information and the
— exchange condition are cleared in ~~a~~ step S73, the exchangeable flag is turned off (~~set~~ ^{set} to 0)
5 — in ~~a~~ step S75, and then, the game processing is returned.

— Furthermore, when starting the character exchange processing in ~~the~~ step S9
shown in Figure 7 is started, a processing of searching and connecting with the
— communication destination described later is executed in ~~a~~ step S81 (see Figure 18,
— Figure 19, and Figure 20). ^{Next} In ~~a~~ succeeding step S83, it is determined whether or not the
10 — user’s mobile game apparatus is the parent device. That is, it is determined whether or not
a communication is established with another mobile game apparatus as the parent device
depending upon whether or not a parent device flag is turned on. It is noted that the parent
device flag is a flag that is turned on when being connected with another mobile game
apparatus as the parent device in the communication destination searching and
15 — connecting processing described later.

— If “NO” in ~~the~~ step S83, that is, if the user’s mobile game apparatus is not the
parent device, it is determined whether or not the user’s mobile game apparatus is the
— child device in ~~a~~ step S85. That is, it is determined whether or not a communication is
established with another mobile game apparatus as the child device depending upon
20 — whether or not a child device flag is turned on. It is noted that the child device flag is a
flag that is turned on when being connected with another mobile game apparatus as the
child device in the communication destination searching and connecting processing
described later.

— If “YES” in ~~the~~ step S85, that is, if the user’s mobile game apparatus is the child
25 — device, the process proceeds to ~~a~~ step S117 shown in Figure 14. On the other hand, if

— “NO” in ~~the~~ step S85, that is, if the user’s mobile game apparatus is not the child device,
 — determining that another game apparatus does not exist within the communicationable
 range or determining that the connection with another game apparatus fails, and then, the
 character exchange processing is returned as shown in Figure 13.

5 — Furthermore, if “YES” in ~~the~~ step S83, that is, if the user’s mobile game apparatus
 is the parent device, the providing character information 1 and providing character
 — information 2 of the communication destination (child device) are received in ~~a~~ step S87.
 — ~~Next,~~
~~In a succeeding~~ step S89, it is determined whether or no the providing character
 information 1 of the communication destination satisfies the exchange condition 1 set in
 10 the user’s mobile game apparatus.

— If “NO” in ~~the~~ step S89, that is, if the providing character information 1 of the
 communication destination does not satisfy the exchange condition set in the user’s
 mobile game apparatus, a non-exchange request is transmitted to the communication
 — destination in ~~a~~ step S91, the communication is broken in ~~a~~ step S93, and then, the
 15 — character exchange processing is returned. On the other hand, if “YES” in ~~the~~ step S89,
 that is, if the providing character information 1 of the communication destination satisfies
 — ~~the~~ exchange condition 1 set in the user’s mobile game apparatus, it is determined
 whether or not the providing character information 2 of the communication destination
 — satisfies the exchange condition 2 set in the user’s mobile game apparatus in ~~a~~ step S95.

20 — If “NO” in ~~the~~ step S95, that is, if the providing character information 2 of the
 communication destination does not satisfy the exchange condition 2 set in the user’s
 — mobile game apparatus, the process proceeds to ~~the~~ step S91. On the other hand, if
 — “YES” in ~~the~~ step S95, that is, if the providing character information 2 of the
 communication destination satisfies the exchange condition 2 set in the user’s mobile
 25 — game apparatus, an exchange request is transmitted to the communication destination in ~~a~~

step S97. Succeedingly, the providing character information 1 and the providing character information 2 set in the user's mobile game apparatus are transmitted to the communication destination in ~~X~~ step S99.

Then, it is determined whether or not an exchange response from the communication destination is present in ~~X~~ step S101. If "NO" in ~~X~~ the step S101, that is, if the exchange response is absent from the communication destination, it is determined whether or not a non-exchange response is present in ~~X~~ step S103. If "NO" in ~~X~~ the step S103, that is, if the non-exchange response is absent from the communication destination, no response from the communication destination is determined, and then, the process directly returns to ~~the~~ step S99 so as to once again transmit the providing character information 1 and providing character information 2 set in the user's mobile game apparatus. On the other hand, if "YES" in ~~X~~ the step S103, that is, if the non-exchange response is present from the communication destination, the process proceeds to ~~X~~ the step S93.

It is noted that it is possible that the player is inquired (confirmed) whether or not to perform the exchange similarly to steps ~~S~~128 and S129 (see Figure 14) described later successive to ~~the~~ step S101.

Furthermore, if "YES" in ~~the~~ step S101, that is, if the exchange response is present from the communication destination, the data (character information data stored in the WRAM 28) of the character X (which is selected as the providing character in the above-described process in ~~the~~ steps S45 to S57) is transmitted in ~~X~~ step S105 shown in Figure 13, and the data is erased from each of the WRAM 28 and the backup RAM 44 in ~~X~~ step S107. Next, in ~~X~~ step S109, the data of the character, i.e., the character information data to be transmitted from the communication destination is received, and newly

recorded (registered) in ~~the~~ character data area 284 of ~~the~~ WRAM 28. It is noted that the

character information data is newly recorded in the backup RAM 44 at a time of being
— saved as shown in ~~the~~ steps S39 and S41 in Figure 9. Thus, the exchange of the characters
in a case that the user's mobile game apparatus is the parent device is executed.

— Thereafter, the communication is broken in ~~X~~ step S111, the exchangeable flag is
5 — turned off (set to 0) in ~~X~~ step S113, and then, the providing character information 1 and the
— providing character information 2, ~~the~~ exchange condition 1, and ~~the~~ exchange condition
— 2 are cleared in ~~X~~ step S115. Then, in ~~X~~ step S116, an image and attribute data (character
— name, level, and so on) of the character X erased in ~~the~~ step S107 and a message
— indicative of ~~the~~ character X being erased are displayed, and an image and attribute data
10 — (character name, level, and so on) of the character newly stored in ~~the~~ step S109 and a
message indicative of the character being newly obtained are displayed, and then, the
character exchange processing is returned.

— Furthermore, as described above, ^{if} ~~in a case that~~ it is determined that the user's
— mobile game apparatus is the child device in ~~the~~ step S85, the providing character
15 — information 1 and providing character information 2 set in the user's mobile game
— apparatus are transmitted to the communication destination (parent device) in ~~X~~ step S117
shown in Figure 14. Next, it is determined whether or not the exchange request is
— received from the communication destination in ~~X~~ step S119.

— If "NO" in ~~the~~ step S119, that is, if the exchange request is not received from the
20 — communication destination, it is determined whether or not the non-exchange request is
— received from the communication destination in ~~X~~ step S121. If "NO" in ~~the~~ step S121,
that is, if the non-exchange request is not received from the communication destination,
no response from the communication destination is determined, and then, the process
— directly returns to ~~the~~ step S117 so as to once again transmit the providing character
25 — information 1 and providing character information 2 set in the user's game apparatus. On

— the other hand, if “YES” in ~~the~~ step S121, that is, if the non-exchange request is received
 — from the communication destination, the communication is broken in ~~A~~ step S131, and
 then, the character exchange processing is returned as shown in Figure 15.

— If “YES” in ~~the~~ step S119, that is, if the exchange request is received from the
 5 — communication destination, the providing character information 1 and providing
 — character information 2 of the communication destination are received in ~~A~~ step S123, and
 it is determined whether or not the providing character information 1 of the
 communication destination satisfies the exchange condition 1 set in the user’s mobile
 — game apparatus in ~~A~~ step S125. If “NO” in ~~the~~ step S125, that is, if the providing
 10 — character information 1 of the communication destination does not satisfy ~~the~~ exchange
 condition 1 set in the user’s game apparatus, the non-exchange response is transmitted to
 — the communication destination in ~~A~~ step S130, and then, the communication is broken in
 — ~~the~~ step S131, returning to the character exchange processing.

— However, if “YES” in ~~the~~ step S125, that is, if the providing character information
 15 — 1 of the communication destination satisfies ~~the~~ exchange condition 1 set in the user’s
 mobile game apparatus, it is determined whether or not the providing character
 information 2 of the communication destination satisfies the exchange condition 2 set in
 — the user’s mobile game apparatus in ~~A~~ step S127. If “NO” in ~~the~~ step S127, that is, if the
 — providing character information 2 of the communication destination does not satisfy ~~the~~
 20 — exchange condition 2 set in the user’s game apparatus, the process proceeds to ~~the~~ step
 S130.

— On the other hand, if “YES” in ~~the~~ step S127, that is, if the providing character
 — information 2 of the communication destination satisfies ~~the~~ exchange condition 2 set in
 the user’s mobile game apparatus, the player is inquired (confirmed) whether or not to
 25 — perform exchange in ~~the~~ step S128. More specifically, the information (kind, level, and

so on) of the providing character of his own (character to be lost by the exchange) and the information (kind, level, and so on) of the providing character of the communication destination (character to be obtained by the exchange), and a user name (based on UserName included in the parent packet and the child packet) of the communication destination (the person with whom the exchange is performed) are displayed on the LCD

5 — 18, so that the player is ^{asked} inquired whether or not to perform the exchange.

— Then, it is determined whether or not the player desires to exchange in ~~the~~ step

— S129. When it is determined the player desires to exchange in ~~the~~ step S129 (it is determined that desiring the exchange is selected by an input of ~~the~~ operation switch 38),

10 — “YES” is regarded, the exchange response is transmitted to the communication destination in ~~the~~ step S133 shown in Figure 15, and the data of the character, i.e., the character information data to be transmitted from the communication destination is received and newly stored (registered) in the character data area 284 of the WRAM 28 in

— ~~the~~ step S135. It is noted that the character information data is newly registered in the backup RAM 44 at a time of being saved in the same manner as the above-described case.

15 — When it is determined that the player does not desire to exchange in ~~the~~ step S129, “NO” is regarded, and then, the process proceeds to ~~the~~ step S130.

— Succeedingly, the data of ~~the~~ character X, i.e., character information data of the character X is transmitted to the communication destination in ~~the~~ step S137, and the data

20 — of the character X (character information data) is erased from each of the WRAM 28 and the backup RAM 44 in ~~the~~ step S139. Thus, the exchange of the characters in a case that the user’s mobile apparatus is the child device is executed. Then, the communication is

— broken in ~~the~~ step S141, the exchangeable flag is turned off (set to 0) in ~~the~~ step S143, the providing character information 1 and the providing character information 2, ~~the~~

25 — exchange condition 1, and ~~the~~ exchange condition 2 are cleared in ~~the~~ step S145, and then,

— the character exchange processing is returned. Then, in ~~step~~ S146, an image and attribute data (name and level of the character, and so on) of the character X newly stored
— in ~~the~~ step S135, and a message indicative of the character being newly obtained are displayed, and an image and attribute data (name and level of the character, and so on) of
5 — ~~the~~ character X erased in ~~the~~ step S139, and a message indicative of the character X being erased are displayed, and then, the character exchange processing is returned.

It is noted that as described above, by transmitting to the mobile game apparatus of the communication destination the providing character information 1 and the providing character information 2, the mobile game apparatus of the communication destination
10 — that has received it determines whether or not ~~the~~ exchange condition 1 and exchange condition 2 of its own are satisfied in this embodiment. However, by transmitting ~~the~~
— exchange condition 1 and ~~the~~ exchange condition 2 to the mobile game apparatus of the communication destination, the mobile game apparatus of the communication destination that has received it may determine whether or not the providing character information 1
15 and providing character information 2 of its own are satisfied.

Furthermore, by transmitting to the mobile game apparatus of the communication destination all of the providing character information 1, the providing character
— information 2, ~~the~~ exchange condition 1, and ~~the~~ exchange condition 2, the mobile game apparatus of the communication destination which has received it may determine whether
20 or not the providing information of the other party satisfies the exchange condition of its own, and whether or not the providing information of its own satisfies the exchange condition of the other party.

— Next, referring to Figure 16 to Figure 20, a description is made ^{of step S81,} on the
— communication destination searching and connecting process ^{is made} in ~~the above-described step~~
25 — ~~S81 (Figure 12).~~ In this processing, the mobile game apparatus 10 operates so as to

establish a connection with another game apparatus as the parent device or the child device. In a case of attempting to establish a connection as the parent device, the mobile game apparatus 10 broadcasts broadcasting data including data indicative of being connectable so as to search another mobile game apparatus that exists within the communicationable range 64. If a connecting request is present from another mobile game apparatus that has received the broadcasting data as the child device, the mobile game apparatus 10 can establish a connection with the child device as the parent device.

On the other hand, in a case of attempting to establish a connection with another game apparatus as the child device, the mobile game apparatus 10 waits for a receiving of the broadcasting data from the parent device. Then, when receiving the broadcasting data from the parent device, by transmitting the connection request to the parent device in response thereto, a connection can be established with the parent device.

In such the communication destination searching and connecting process, each mobile game apparatus 10 alternately repeats a processing of functioning as the parent device so as to search the child device and a processing of functioning as the child device so as to receive a search from the parent device. More specifically, a predetermined period (T cycle in Figure 16) is rendered one cycle, one part of each cycle is a period (Tsp in Figure 16) during which the mobile game apparatus functions as the parent device, and the rest of the each cycle is a period (Tsc in Figure 16) during which the mobile game apparatus functions as the child device. Herein, a connection can be established between the game apparatus functioning as the parent device and the game apparatus functioning as the child device while a connection cannot be established between the game apparatus functioning as the parent device and the game apparatus functioning as the parent device, and between the game apparatus functioning as the child device and the game apparatus functioning as the child device. Therefore, in a case that a period during which the mobile

game apparatus functions as the parent device and a period during which the mobile game apparatus functions as the child device are fixed, it becomes impossible to establish a connection between the two game apparatuses accidentally having the coincident periods with each other. To prevent such a problem, an allocation or an arrangement of the periods during which the mobile game apparatus functions as the parent device and during which the mobile game apparatus functions as the child device per one cycle is changed at random. A method for changing the allocation at random is a “communication destination searching and connecting process (1)” as shown in Figure 16 (A), and a method for changing the arrangement at random is a “communication destination searching and connecting process (2)” as shown in Figure 16 (B).

Referring to Figure 16 (A), in the communication destination searching and connecting process (1), the allocation of the Tsp and the Tsc is determined at random described above. Rendering the period (one cycle) of the processing a fixed value of Tcycle (e.g., four seconds), the length of the Tsc is determined to be a random value from 0 to Tcycle, and the length of the Tsp is determined to be the rest of the period of the Tcycle (Tcycle – Tsc). Furthermore, the Tsc and the Tsp are set in this order during the Tcycle. The length of the Tsc is determined at random every time, and therefore, the length of the Tsp is also determined at random. Thus, it is possible to avoid a case that the mobile game apparatus cannot establish the connection with another mobile game apparatus that exists within the communicationable range 64. It is noted that excessive shortness of the Tsp prevents the mobile game apparatus from accurately searching another mobile game apparatus, and may disable an establishment of the connection with another game apparatus. Therefore, the required minimum period with respect to the Tsp is determined, and if it is impossible to secure the same, the Tsc may be once again determined.

It is noted that although the Tsc and the Tsp are set in this order during the Tcycle in this embodiment, this is settable in the reverse order thereto.

Referring to Figure 16 (B), in the communication destination searching and connecting process (2), the arrangement of the Tsp and the Tsc is determined at random as described above. That is, rendering the length of the Tsp a fixed value, a starting position of the Tsp within the Tcycle is set at random. More specifically, as shown in Figure 16 (B), in the communication destination searching and connecting process (2), the T cycle (fixed value, i.e., four seconds in this embodiment) is provided with Tsp determined to be the fixed value, and Tsc1 and Tsc2 that are determined at random so as to sandwich the Tsp between them. That is, within the Tcycle, the Tsc1, the Tsp and the Tsc2 are provided in this order. Furthermore, the length of the Tsc1 is determined at random from 0 to (Tcycle-Tsp), and the length of the Tsc2 is determined by subtracting from the Tcycle the Tsc1 that is determined at random and the Tsp.

It is noted that the Tsc and the Tsp are set within the Tcycle in this order in this embodiment, and the starting position of the Tsp is determined at random, while in a case that the Tsp and the Tsc are set within the Tcycle in this order, the starting position of the Tsc may be determined at random.

Figure 17 (A) is an illustrative view showing in detail a parent device packet broadcasted from the parent device to the child device. The parent device packet has a field sync for storing synchronizing data at its head, and has a field PID for storing an identifying number PID of the game apparatus (parent device) subsequent to that synchronizing data field sync. Subsequent to the field PID, a user name field UserName is formed. In the user name field UserName, a user name (player name) read-out from the EEPROM 54 (Figure 1), which corresponds to "Taro", "Ichiro", ~~and~~ etc. in this embodiment, is registered.

The parent packet successively includes fields Eflag, GameName, and Payload subsequent to the user name field UserName. The Eflag is data indicative of being connectable with another mobile game apparatus (child device), and is a flag that is turned on when searching another mobile game apparatus (child device) as the parent device, and is turned off during being connected with another mobile game apparatus (child device). The GameName is, as described above, the identifying information of the game program stored in the ROM 42 of the cartridge 16 connected to the game apparatus of the parent device.

In a Payload field Payload, substantive transmission data from the parent device to the child device is stored. More specifically, this is a field for transmitting a connection response transmitted from the parent device to the child device, the data of the providing character information 1 and data of the providing character information 2 required at a time of the game data exchange processing, and transmitting the game data required for the communication game, or the game data (character information data) to be exchanged, and a field for storing data to be transmitted from the parent device to the child device.

Figure 17 (B) is an illustrative view showing in detail a child device packet to be transmitted from the child device to the parent device. The child device packet includes a head field CID for storing an identifying number of the game apparatus (child device), a user name field UserName, and a payload field Payload subsequent thereto. The user name field UserName is information of the user name (player name) of the child device similarly to the above description. The payload field Payload stores substantive transmission data from the child device to the parent device. More specifically, this is a field for storing a connection request transmitted from the child device to the parent device, the data of the providing character information 1 and data of the providing character information 2 to be transmitted from the child device to the parent device, or the

game data. By communicating between the parent packet and the child packet, it is possible for the parent device and the child device to know each other's user names.

Each mobile game apparatus 10 alternately repeats a transmission of the parent packet and a receiving of the child packet when functioning as the parent device, and
5 alternately repeats a receiving of the parent packet and a transmission of the child packet when functioning as the child device. In the communication destination searching and connecting process (1) and (2), during the TSP period, the mobile game apparatus 10 repeatedly performs a process of broadcasting the parent packet and then, attempting to receive the child packet (connection request) to be transmitted from another mobile game
10 apparatus 10. Furthermore, during the TSC period, the mobile game apparatus 10 repeatedly performs a process of attempting to receive the parent packet transmitted from another game apparatus, and transmitting the child packet (connection request) when succeeding in the receiving.

In addition, the mobile game apparatus 10 is driven by a battery, and transmits
15 broadcasting data for each predetermined time period (64ms in this embodiment) during which it functions as the parent device in order to prevent waste of the battery. That is, a broadcast is intermittently executed.

It is noted that although omitted in the above-described character exchange processing (Figure 12 to Figure 15), the providing character information 1, the providing
20 character information 2, and the game data (character information data) are stored in the payload field Payload of the parent device packet or the child device packet so as to be exchanged between the parent device and the child device.

A description is made on each of the communication destination searching and connecting process (1) and the communication destination searching and connecting
25 process (2) by use of the flowcharts in detail.

Figure 18 is a flowchart showing the communication destination searching and connecting process (1). Referring to Figure 18, when starting the communication destination searching and connecting process (1), the Tsc is determined at random within a range of from 0 to the Tcycle in a step S151. Although not illustrated, the Tcycle is a fixed value, and a determination of the Tsc causes a determination of the Tsp.

In following steps S153 to S163, a processing to be executed in the above-described Tsc period for searching the parent device by functioning as the child device is performed. In steps S165 to S177, a processing to be executed in the above-described Tsp period for searching the child device by functioning as the parent device is performed.

— In the step S153, a search of the parent device is started. Although not illustrated, a timer circuit is started at this time. Next, it is determined whether or not the broadcasting data (data indicative of the Eflag being turned on) indicative of the parent device being connectable is received in the step S155.

15 — If “YES” in the step S155, that is, if the broadcasting data indicative of the parent device being connectable (parent device packet) is received, a connection request (child device packet) is transmitted to the parent device in the step S157, and then, it is determined whether or not the connection response from the parent device is received in the step S159. If “NO” in the step S159, that is, if the connection response is not received from the parent device, the process directly returns to the step S157. On the other hand, if “YES” in the step S159, that is, if the connection response from the parent device is received, determining that a connection is established with another mobile game apparatus as the child device, the child device flag is turned on in the step S161, and then, the communication destination searching and connecting process (1) is returned.

25 It is noted that although omitted in Figure 18, when the communication destination

searching and connecting process (1) is started, the child device flag is turned off (reset) (the same is applied to the parent device to be described later).

— On the other hand, if “NO” in ~~the~~ step S155, that is, if no broadcasting data from the parent device is received, or if the broadcasting data from the parent device is
5 received, but the broadcasting data is not indicative of being connectable (Eflag is turned off), it is determined whether or not Tsc seconds have elapsed as a parent device searching time period, that is, a period for attempting to connect as the child device to
— another mobile game apparatus in ~~the~~ step S163.

It is noted that it is determined whether or not the GameName of the broadcasting
10 data of the parent device is coincident with the GameName stored in the ROM 42 of the
— cartridge 16 attached to the child device in ~~the~~ step S155, and if they are not coincident
— with each other also, the process proceeds to ~~the~~ step S163. This is true for a communication destination searching and connecting process (2) described later in steps S185 and S211 (see Figure 19 and Figure 20).

15 — If “NO” in ~~the~~ step S163, that is, if the Tsc seconds have not elapsed as the parent device searching time period, the process directly returns to ~~the~~ step S155. On the other
— hand, if “YES” in ~~the~~ step S163, that is, if the Tsc seconds have elapsed as the parent device searching time period, a search of the child device is started in ~~the~~ step S165, that
— is, the timer circuit is reset and started, and the data indicative of being connectable
20 — (parent device packet in which Eflag is turned on) is broadcasted in ~~the~~ step S167.

— ^{Next,} ~~In the succeeding~~ step S169, it is determined whether or not a connection request
— from the child device (child device packet) is received. If “YES” in ~~the~~ step S169, that is, if the connection request from the child device is received, the connection response is
— transmitted to the child device in ~~the~~ step S171, the parent device flag is turned on in ~~the~~

25 step S173, and then, the communication destination searching and connecting process (1)

is returned. That is, the connection between another mobile game apparatus is established as the parent device.

— On the other hand, if “NO” in ~~the~~ step S169, that is, if the connection request from
— the child device is not received, 64ms is waited in ~~the~~ step S175, and in ~~the succeeding~~
5 — step S177, it is determined whether or not Tsp seconds have elapsed as a child device
searching time period, that is, a period for attempting to connect as the parent device to
— another mobile game apparatus. If “NO” in ~~the~~ step S177, that is, if the Tsp seconds have
— not elapsed as the child device searching time period, the process directly returns to ~~the~~
— step S167. On the other hand, if “YES” in ~~the~~ step S177, that is, if the Tsp seconds have
10 elapsed as the child device searching time period, it is determined that the Tcycle period
has elapsed, the communication destination searching and connecting process (1) is
— returned. Waiting 64 ms in ~~the~~ step S175 enables an intermittent broadcasting
— transmission processing in ~~the~~ step S167, and then, it becomes possible to lower power
consumption.

15 Figure 19 and Figure 20 are flowcharts showing the communication destination
searching and connecting process (2). Referring to Figure 19, when starting the
communication destination searching and connecting process (2), the Tsc1 is determined
— at random within a range of from 0 to (Tcycle-Tsp) in ~~A~~ step S181. As described above,
the Tcycle and the Tsp are fixed values, and a determination of the Tsc1 causes a
20 determination of the Tsc2.

In following steps S183 to S193, a processing to be executed in the
above-described Tsc1 period for searching the parent device by functioning as the child
device is performed. In steps S195 to S207, a processing to be executed in the
above-described Tsp period for searching the child device by functioning as the parent
25 device is performed. Furthermore, in steps S209 to S219, a processing to be executed in

the above-described Tsc2 period for searching the parent device by functioning as the child device is performed.

— In ~~the~~ step S183, a search of the parent device is started. Although not illustrated,
— the timer circuit is started at this time. Next, in ~~the~~ step S185, it is determined whether the
5 broadcasting data indicative of the parent device being connectable is received or not.

— If “YES” in ~~the~~ step S185, that is, if the broadcasting data indicative of the parent
device being connectable is received, a connection request is transmitted to the parent
— device in ~~the~~ step S187, and then, it is determined whether or not the connection response
— from the parent device is received in ~~the~~ step S189. If “NO” in ~~the~~ step S189, that is, if the
10 connection response from the parent device is not received, the process directly returns to
— ~~the~~ step S187. On the other hand, if “YES” in ~~the~~ step S189, that is, if the connection
response from the parent device is received, determining that a connection is established
as the child device with another mobile game apparatus, the child device flag is turned on
— in ~~the~~ step S191, and then, the communication destination searching and connecting
15 process (2) is returned as shown in Figure 20.

It is noted that although omitted in Figure 19, the child device flag and the parent
device flag are turned off when starting the communication destination searching and
connecting process (2) similarly to the communication destination searching and
connecting process (1).

20 — On the other hand, if “NO” in ~~the~~ step S185, that is, if no broadcasting data from
the parent device is received, or if the broadcasting data from the parent device is
received, but the broadcasting data is not indicative of being connectable (Eflag is turned
off), it is determined whether or not Tsc1 seconds have elapsed as a parent device
searching time period, that is, a period for attempting to connect as the child device to
25 — another mobile game apparatus in ~~the~~ step S193. If “NO” in ~~the~~ step S193, that is, if the

Ts1 seconds have not elapsed as a parent device searching time period, the process
 — directly returns to ~~the~~ step S185. On the other hand, if “YES” in ~~the~~ step S193, that is, if
 the Ts1 seconds have elapsed as the parent device searching time period, a search of the
 — child device is started in ~~the~~ step S195, that is, the timer circuit is reset and started, and the
 5 — data indicative of being connectable is broadcasted in ~~the~~ step S197.
 — ~~In the succeeding~~ ^{Next} step S199, it is determined whether or not the connection request
 — from the child device is received. If “YES” in ~~the~~ step S199, that is, if the connection
 request is received from the child device, the connection response is transmitted to the
 — child device in ~~the~~ step S201, the parent device flag is turned on in ~~the~~ step S203, and
 10 then, the communication destination searching and connecting process (2) is returned.
 That is, the connection with another mobile game apparatus is established as the parent
 device.
 — On the other hand, if “NO” in ~~the~~ step S199, that is, if the connection request from
 — the child device is not received, 64ms is waited in ~~the~~ step S205, and in ~~the~~ succeeding
 15 step S207, it is determined whether or not Tsp seconds have elapsed as the child device
 searching time period, that is, a period for attempting to connect as the parent device to
 — another mobile game apparatus. If “NO” in ~~the~~ step S207, that is, if the Tsp seconds have
 — not elapsed as the child device searching time period, the process directly returns to ~~the~~
 — step S197. On the other hand, if “YES” in ~~the~~ step S207, that is, if the Tsp seconds for
 20 searching the child device have elapsed as the child device searching time period, a
 — searching of the parent device is started in ~~the~~ step S209 shown in Figure 20. At this time,
 the timer circuit is reset and started.
 — ~~In the following~~ ^{Next} step S211, it is determined whether or not the broadcasting data
 indicative of the parent device being connectable is received. If “YES” in ~~the~~ step S211,
 25 that is, the broadcasting data indicative of the parent device being connectable is received,

the connection request is transmitted to the parent device in ~~the~~ step S213, and then, it is determined whether or not the connection response from the parent device is received in ~~the~~ step S215. If "NO" in ~~the~~ step S215, that is, if the connection response from the parent device is not received, the process directly returns to ~~the~~ step S213. On the other hand, if "YES" in ~~the~~ step S215, that is, if a connection response from the parent device is received, determining that a connection is established as the child device with another mobile game apparatus, the child device flag is turned on in ~~the~~ step S217, and then, the communication destination searching and connecting process (2) is returned.

On the other hand, if "NO" in ~~the~~ step S211, that is, if no broadcasting data is received from the parent device, or if the broadcasting data from the parent device is received, but the broadcasting data is not indicative of being connectable (Eflag is turned off), it is determined whether or not Tsc2 seconds have elapsed as the parent device searching time period in ~~the~~ step S219. If "NO" in ~~the~~ step S219, that is, if the Tsc2 seconds have not elapsed as the parent device searching time period, the process directly returns to ~~the~~ step S211. On the other hand, if "YES" in ~~the~~ step S219, that is, if the Tsc2 seconds have elapsed as the parent device searching time period, determining that the Tcycle period has elapsed, the communication destination searching and connecting process (2) is returned.

According to this embodiment, it is possible to automatically exchange characters having coincident exchange conditions by the radio communication, and therefore, this eliminates a trouble of negotiating with player's acquaintance for exchanging the characters, and so forth. That is, it is possible to exchange the game data with ease.

Furthermore, the person with whom the user exchanges the characters is not limited to his acquaintance, and therefore, if the player goes to wherever people gather, it is possible to increase the possibility of exchanging the characters, and hence, it is

possible to improve an entertainment aspect of the game.

It is noted that although a description is only made on the game system utilizing the mobile game apparatus in this embodiment, it is possible to use a portable terminal — such as a portable phone, a PDA, ~~and~~ etc. having a game function in place of the mobile
5 game apparatus.

— ~~Still~~ Furthermore, one providing character and one exchange condition are set as the exchange condition to be set at a time in this embodiment. However, a plurality of — providing character information are set at ^{one} a time, and the exchange condition for each providing character information may be set. That is, a plurality of game data out of the
10 game data possessed by the player himself are set as the providing game data, the exchange condition is set for each providing game data. This makes it possible to set a — plurality of the exchange conditions at ^{one} a time, to heighten ^{the} a possibility of being coincident with another player's exchange condition, and heighten a possibility of executing the exchange of the game data.

15 In this case, assuming that a plurality of providing characters are respectively set to a game apparatus A and a game apparatus B, and the exchange condition is set for each providing character, for example. When characters are exchanged between the game apparatus A and the game apparatus B, a set of the exchange condition of the game apparatus A and the providing character of the game apparatus B that satisfies the
20 condition is picked. Then, with respect to the set of the exchange condition of the game apparatus A (exchange condition a) and the providing character of the game apparatus B (providing character b) that have been picked, it is determined whether or not the providing character of the game apparatus A (providing character a) to which the exchange condition is set satisfies the exchange condition of the game apparatus B
25 (exchange condition b) that is set against the providing character b, and if they are

coincident with each other, the providing character a and the providing character b are exchanged.

In addition, although the kind and level of the character are designated as the providing character information and the exchange condition in this embodiment, there is
5 no need to be limited thereto. That is, only the kind of the character may be designated, or
— the kind of the character is not designated, but ~~only~~ the level thereof may be designated.
In addition, it is possible that the information to be designated is information except for the kind and level of the character.

Furthermore, in this embodiment, the parent device broadcasts predetermined
10 information, then, establishes a connection with the child device that has received it, and
then transmits and receives information for identifying the exchange condition.
However, information for identifying the exchange condition (information (kind and level) of the providing character and information (kind and level) of the required
character in the above-described embodiment) may be included in the broadcasting data
15 to be transmitted from the parent device. Then, the child device that has received the
broadcasting data applies a connection request to the parent device only when the
information satisfies the information of the providing character and exchange condition
of its own with referring to the information of the providing character and the required
— character, ~~and~~ etc. included in the broadcasting data.

20 Still furthermore, it is appropriate that although the providing game data and the
exchange condition are set when the progress of the game satisfies the predetermined
condition on the basis of the exchange table in this embodiment, the player sets the
providing game data and the exchange condition whenever he wants.

In addition, it is appropriate that although the character exchange processing (in
25 — ~~the~~ S9 in Figure 7) is executed parallel to the execution of the game processing (in ~~the~~ S5

in Figure 7) in this embodiment, only the character exchange processing is executed when
the game processing is not performed. In this case, since the LCD 18 need~~s~~ not ~~to~~ be
displayed except for the process for confirming player's will to exchange and the process
for displaying the information as to the exchanged game data when the exchange is
5 performed, a power supply to the LCD 18 is shut off (a display of the LCD 18 is turned
off by setting the value of the register to 0), and the CPU core 22 performs the character
exchange processing. Then, it is appropriate that when the process for confirming the
player's will to exchange is performed (in ~~the~~ step S128 and S129 in Figure 14) and the
process for displaying the information of the exchanged character (in ~~the~~ step S116 in
10 Figure 13 and in ~~the~~ step S146 in Figure 15) are executed, by setting the value of the
electric power supply register to 1, the power supply to the LCD 18 is performed to
display the screen for confirming the exchange and the information of the exchanged
character. This enables the player to continue to search a person who has a coincident
exchange condition by executing the character exchange processing with the game
15 apparatus in his bag, pocket, and so on while due to the display of the LCD 18 being tuned
off, it is convenient for a power savings. It is appropriate that considering such a
situation, when the display of the LCD 18 is turned on, by outputting a sound (music)
from the game apparatus 10 or by vibrating the game apparatus 10 with a vibration
function, the player is informed of the fact.

20 Furthermore, it is appropriate that even if a character is set to be the providing
character, when the character is selected as a character to be used in the game processing
(Figure 8 and Figure 9), the providing character needs not to be an exchangeable object.
That is, with respect to the character selected by the player before the game as the
character to be used in the game processing, even if the character is set to be the providing
25 character, it is regarded that the character is not set to be the providing character in the

character exchange processing (see Figure 12 to Figure 15), the character is eliminated from the processing.

indent → Although the present invention has been described and illustrated in detail, it is clearly understood that the same is by way of illustration and example only and is not to be taken
5 by way of limitation, the spirit and scope of the present invention being limited only by the terms of the appended claims.

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